MARINE REVIEW.

VOL. XV. CLEVELAND, O., JUNE 3, 1897. No. 23.

Canada Preparing to Adopt the White Law.

When congress passed, some time ago, the White law for the regulation of navigation on the lakes, it was quite generally agreed that some difficulties would be encountered on account of the Canadian regulations, which were not changed, being different to those contained in the White law, especially with regard to fog signals. Thus we have had on the lakes since the adoption of the White law in this country, one set of fog signals used by Canadian vessels (at least when in Canadian waters) and another set of signals used by American vessels. It is a wonder that collisions have not resulted from this confusion. Governments are slow of action, but there is reason to expect now that the Dominion officials will soon adopt for their lake vessels a code of rules similar to those contained in the White law. The question has been brought to the attention of the Canadian department of marine and fisheries through Mr. A. Piers, superintendent of the steamship line of the Canadian Pacific Railway. The dominion government was about to take action on the lakes regarding the conclusions of the International Marine Conference when it was explained that the White law, which governs the navigation of vessels of the United States on the lakes, was prepared without reference of any kind to the action of this conference. It was a law prepared specially for the lakes after the conference had finished its deliberations, and it may be explained also that this special law for the lakes has not been and will not be disturbed on account of any action of the conference. It would seem, therefore, that the best course for the dominion government to pursue would be to adopt a law for the government of its lake vessels similar to the White law. Most of the leading managers of Canadian vessels favor such a course, as indicated by the following extracts from Mr. Piers' letter to the department of marine and fisheries:

"The Canadian rule is that in a fog a vessel under way shall sound at intervals of two minutes one blast of the whistle; if under way but stopped, at intervals of two minutes, two blasts with an interval of one second between. The United States rule is that in a fog, whether under way or stopped, a steamer shall sound at intervals of not more than one minute, three distinct blasts of her whistle. Furthermore the one blast and two blast signals adopted by Canada, represent in both the Canadian and United States codes the signals respectively for port and starboard in clear weather.

"As our steamers, and all the Canadian steamers plying in the upper lakes, have to navigate in both Canadian and United States waters, and in some places, such as the St. Clair river and Lake St. Clair, where there is practically no definition of each water, I submit that the existing and the contemplated code of signals would be far safer if made to harmonize entirely with those of the United States on the great lakes. Three blasts of a whistle in a fog are more readily heard than a single blast in the ratio of three to one, and for that reason alone the American signal is preferable. Take as an example one of our steamers on a voyage from Owen Sound to Fort William. She would have to use Canadian signals until some miles east of the 'Ducks' in Lake Huron; then she would have to sound American signals up to Detour at the mouth of the St. Mary's river; in the St. Mary's river both codes would have legally to be used according to positions; above the Sault Ste. Marie locks as far as Point Iroquois, both codes would be in force; from there to a point half way between Passage island and Thunder cape it would be the American code; and finally into Fort William the Canadian one."

Copies of the foregoing letter have been forwarded by the department of marine and fisheries to owners and managers of Canadian vessels for consideration, and as it is expected that their answers in nearly all cases will be favorable to the adoption of regulations similar to those contained in the White law, it is hoped that before the close of the present season all vessels on the lakes, Canadian and American alike, will be sailing under uniform rules.

The Review has excellent photographs of lake ships.

Lake Freight Matters.

Although quite a large number of vessels did not turn a wheel until about the middle of May, they have of late been gradually pushing out of winter quarters, and full 90 per cent. of the entire fleet is now in commission. This increase of tonnage has weakened matters during the past few days, so that great difficulty has been found in securing cargoes on a basis of 50 cents for ore from the head of Lake Superior and 20 cents on coal to the principal upper lake points, but there is still a hopeful feeling on account of the signs of improvement in all branches of the iron trade. There is some ore selling all the time, and it is estimated that full 400,000 tons has been disposed of by Cleveland sales agents within the past six or eight days to the smaller furnace owners, who are following slowly in the wake of the big concerns. The amount of grain moved thus far from both Duluth and Chicago has been much larger than was expected, and it is quite evident that an ore movement equal to the requirements of an ordinary season, in connection with the grain shipments, would have resulted in very profitable lake freights up to this time, especially in view of the greater draft of water now afforded throughout the lakes.

There was never a time when soft coal was as cheap as at present—about $2 a ton delivered at the head of Lake Superior—and yet the trade of the northwest is unusually slow in providing for requirements of the coming year. Even the prospects of a strike in the mining regions of Ohio & Pennsylvania does not seem to make the least change in the depressed conditions that have prevailed for several months past. Surplus stocks are not the cause of this depression in all lines of the lake trade, and the opinion that when improvement comes it will come all at once is more generally accepted with each day of delay and restricted shipments. The prevailing wild rates of freight, some of which are nominal, are: Iron ore—From the head of the lakes to Lake Erie ports, 50 cents; from Marquette, 50 cents; from Escanaba, 50 cents. Hard coal—From Buffalo to Duluth, Chicago and Millwaukee, all 20 cents. Soft coal—From Ohio ports to Duluth, Sheboygan and Milwaukee, 20 cents; to Portage and Green Bay, 25 cents. Grain—Chicago to Buffalo, 1¼ cents; Duluth to Buffalo, 1½ cents.

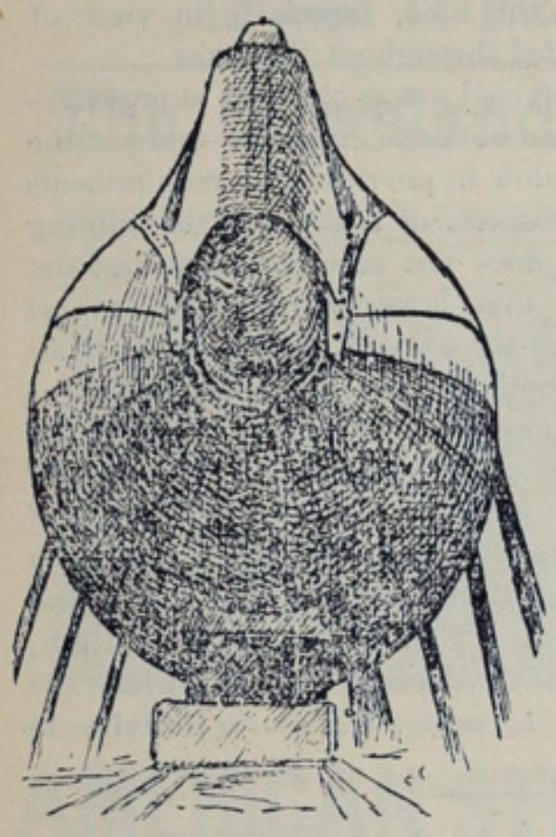
Unless vessel masters take heed of the several warnings they have received regarding the necessity of checking down to a very low rate of speed in passing through the Grosse point cut, it is more than probable that the war department will issue stringent rules for the navigation of this channel. With Sault river regulations and long sets of rules for all of the canals, the vessel interests already have enough to contend with in this line, but officials of the war department can hardly be blamed if they bring out more rules for this cut. The great majority of vessel captains have regarded the request of the department that special care be exercised in this channel, but there are always a few men in lake ships who cause others to suffer on account of their recklessness. The banks of this channel will certainly be injured if deep-laden vessels are rushed through it at a high rate of speed, and the vessel captain who is willing to abide by the request of the engineers should report the carelessness of the few who refuse to follow reasonable instructions.

Executive officers of the Lake Carriers' Association, who have succeeded in inducing the secretary of the treasury to retain Commander Geo. F. F. Wilde as naval secretary of the light-house board for aonther year, were in hopes that nothing would be said of the matter from Washington, as it was thought that the association might be establishing a bad precedent if charged with interfering in the regular transfers of army and navy officers. Commander Wilde had shown a full knowledge of the needs of the lakes, however, and just now there is a very large amount of light-house work going on, with which he is especially well acquainted. His retention is due to the personal efforts of Senator Hanna of Ohio, and Senator McMillan of Michigan.

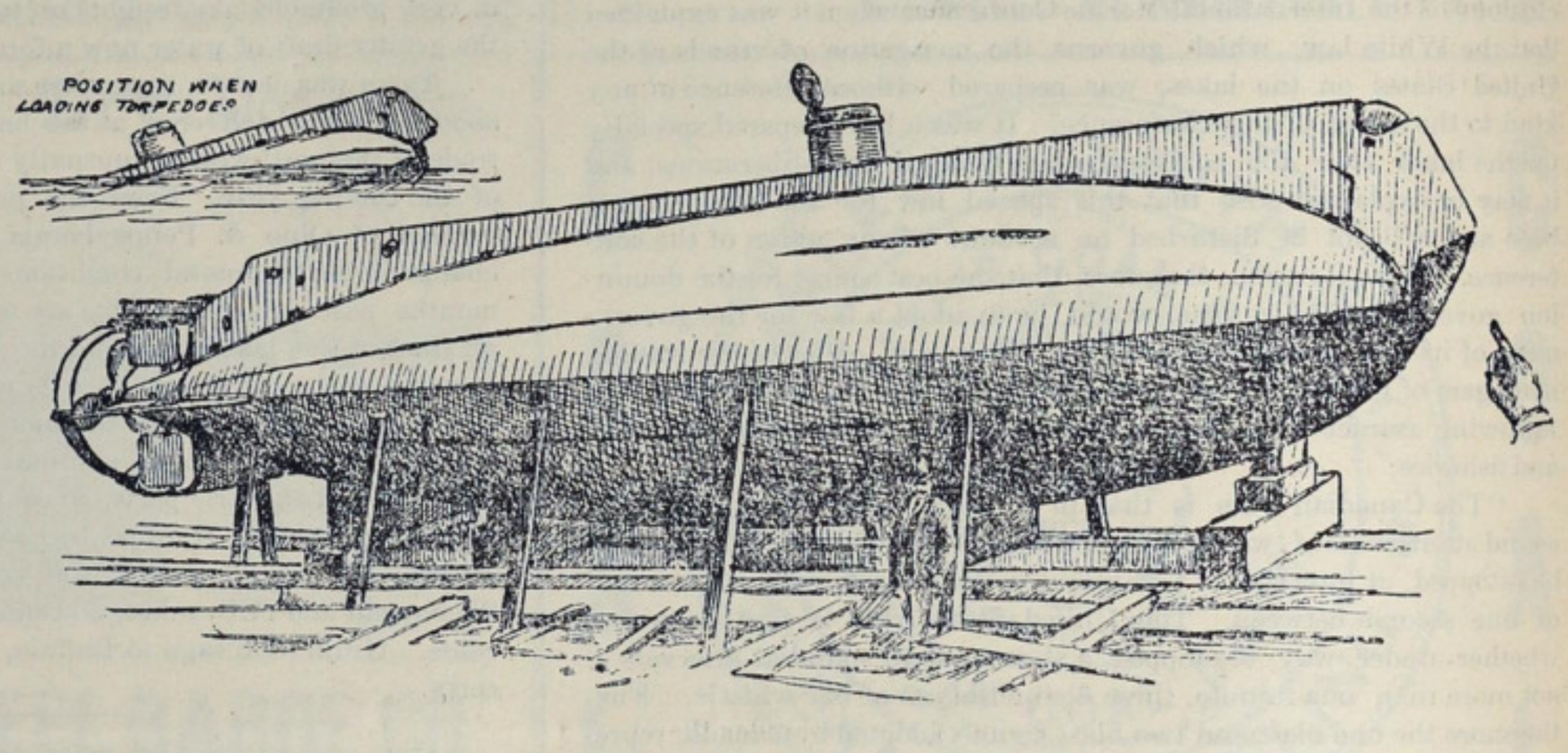
Predicting Success for the Holland.

In a letter to the New York World, Lewis Nixon, builder of the new submarine torpedo boat Holland, which was launched at Elizabethport, N. J., recently, says he is of the opinion that she embodies ideas that will make her the only practical submarine torpedo boat yet created. This vessel, both because of the character of the inventor and the high repute of its constructor, will attract the attention of the whole world of naval enterprise, and the practical tests soon to be made of the vessel will be watched with profound interest. If the Holland proves to be what all appearances seem to warrant the designer in claiming, she is likely to work a revolution in naval warfare. She is presented as a definite solution of the problem of submarine navigation, with a speed of eight knots an hour under water and capable of being submerged and sent beneath the surface in less than one minute. If these conditions can be accomplished in practical working tests, and if to them can be added the elements of safety for the crew and precision of movement while under way, the importance of the new craft is almost incalculable.

Mr. Nixon says that the Holland possesses one important advantage over all others of its class in its facility of movement. "It may be manoeuvred," he says, "so as to resemble a minnow nibbling at a bait. The European boats, none of which have the fighting power of the Holland, are from 150 to 200 feet long. Vessels of this class having such length are useless for harbor defense work, for they need an ocean to play in. For submarine work, too, they are unwieldy. A slightly too great movement of the horizontal rudders used in sinking the boat beneath the surface would throw such long vessels against the sea's bottom, while so large a mass moving on the surface (as would be necessary when on soundings) would present an easy mark to the enemy. The small but powerful Holland, however, can swim in a pond, and in water deep enough to float a battleship can play like a porpoise or steal upon its prey like a shark."



BOW VIEW



SUBMARINE TORPEDO BOAT HOLLAND ON STOCKS.

This vessel was not constructed for the navy, as might have been supposed, but to the order of her inventor. Another and a much larger boat of the same type is being built for the government at Baltimore, and it is expected that she will be completed in October. The government appropriated $150,000 for the Baltimore boat.

The shape of these vessels, as indicated by the illustration, is cylindrical. The Holland is 55 feet 3 inches long and her widest diameter is 10 feet 3 inches. Power comes from a gasoline engine and a dynamo, the former to be used when the boat is sailing along the surface and the latter when submerged. It will take less than a minute to submerge and about the same length of time to rise. Armament consists of three torpedo tubes, to discharge high explosives. Six men will constitute the crew. The vessel is equipped with an entire outfit of Blake pumps. One of these pumps is of special design to be used in connection with a system for submerging or raising the boat when necessary during its manoueverings.

Appointments of captains and engineers for 1897, vest pocket size, $1.00. Order from the Marine Review, Cleveland, Ohio.

Advances in Transportation by Water.

It is a noteworthy fact that in the matter of transportation by water, quite apart from all questions of steam and electricity, it has been reserved for the present generation to make advances and improvements which apparently might have been made equally well a thousand years ago. Interesting reference to this was made some time ago by Sir Benjamin Baker in a presidential address to the British Institution of Civil Engineers. Thus, the aborigines of America and many races of mere savages early found out the advantage which the lightness of birch bark canoes gave them in war or in pursuit of game, and paddles of all kinds were developed. Why, when speed was a matter of life or death to them, did they not ages ago give up paddles and take to oars, and find out, as our record-breaking rowing men have done, that, by the simple contrivance of sliding seats, an advantage is gained which, other things being equal, renders the result of a race a certainty? Again, why, when sailing ships had been in existence thousand of years, did Columbus set off to discover America in a carved and decorated 70-foot sarcophagus which could neither sail nor weather a storm, instead of in a clipper ship? The men who built the Santa Maria for Columbus, and many larger vessels, were quite capable as artificers of constructing, with the same materials and implements, clipper ships of 500 to 900 tons such as astonished the world in the historical race from China to London in 1866. At the end of May in that year, five vessels, the Fiery Cross, Ariel, Taeping, Serica, and Taitsing, left Foo-chow-foo laden with tea for the race home. With varying luck the different vessels, at times covering 328 miles in a day, proceeded on their long course, and in the English channel the Ariel and Taeping sighted each other for the first time since leaving China, and off Plymouth were racing neck and neck with every stretch of canvas set. Finally after about three-months' race, the Ariel finished ten minutes ahead of the Taeping, having left China twenty minutes before her; the Serica arrived the same day, the Fiery Cross the following day and the Taitsing the day after. Allowing for the difference of time in starting, three of the vessels did the passage in ninety-nine days, and the two others took two days longer. Here there was no help from steam or steel, but the old materials, wood and canvas, sufficed for the work. As so many advances might have been made in the direction of rapid transit by sea and by land by the skillful but illiterate mechanics of many centuries ago, without any aid from scientific research, it would appear probable that the reason for the solution of the problem in being so long deferred was that wars, revolutions and great social changes occupied men's thoughts in former times, and there was not that unceasing struggle for commerical supremacy and material advantages which is so characteristic of the present century. Necessity, therefore, did not give birth to invention. —Cassiers' Magazine.

An artistic brochure entitled "Summer Outings" is published by the Nickel Plate road, describing vacation resorts along that line. Address B. F. Horner, general passenger agent, Cleveland, O., for a copy.
55 Jul 15

The Final Determination of a Novel and Important Point.

Few cases are better known in lake marine circles, and among marine insurance people generally, than that of the J. P. Donaldson. On November 19, 1880, the propeller Donaldson left Buffalo, having in tow the barges Bay City, Wesley and Eldorado. On the morning of the 20th a gale was encountered about off Erie, and an attempt was made to make that port for shelter. The violent squalls and heavy seas, however, drove the propeller and her tow bodily toward the shore. The propeller used all her power to prevent herself and barges from going ashore, until the master of the Donaldson saw that is was inevitable that the barges would go ashore, and any further endeavor on his part to prevent involved, almost certainly, the loss of the propeller and would imperil the lives of her officers and crew, all without benefit to the barges. In this view, after timely warning to the barges, the line between the propeller and first barge was cut. Being thus disencumbered, the propeller succeeded in saving herself, and the barges were driven ashore.

In January, 1881, libels were filed in the District Court of the United States at Detroit against the Donaldson, alleging that the loss of the barges was due to their improper and negligent abandonment by the popeller. On the hearing it was further urged that if the popeller could be exonerated from negligence, nevertheless she should be held liable for her proportion of the value of the lost barges in general average; that a common, imminent and apparently inevitable danger threatened the whole, and the propeller transferred this peril from the whole to a part of the venture successfully, i. e. jettisoned the barges, and must, therefore, make contribution. The present Justice Brown (then district judge) held adversely to each of these claims, and dismissed the libels.

The case was appealed to the circuit court, and the late Justice Mathews affirmed the decision of Judge Brown as to the claim based on negligence, and reversed it on the second ground, saying: "The contract in the present case was for the whole voyage, in view of all its perils and contingencies, and completely identified the propeller with her tow for all the purposes of the enterprise, the success of which the towing vessel itself, as well as the tow, had mutually agreed to share as the sole price to each for their respective contributions to the common interest."

The compensation to be paid the propeller was a given proportion of the barges' freight. As to this, Justice Matthews said: "It had the effect to establish such a mutuality of interest in the enterprise as to constitute the towing vessel and her barges in tow a unit for the purposes of the voyage, so for that a voluntary sacrifice by the master in authority over all of a part for the benefit of the remainder thereby saved from destruction by a peril of navigation must be compensated upon the principles of general average." Under this decision, the contribution of the propeller in general average was fixed at $11,282.60. Meanwhile the circuit court of appeals was established, and the case was taken to that court, which, desiring the instructions of the supreme court, certified the question to it for determination, viz., whether the law of the general average contribution is applicable to such cases.

The case was submitted to the supreme court in March, 1896, Harvey D. Goulder appearing for the Donaldson and F.H.Canfield for the barges, and on the 24th inst., the opinion of that court was filed, concurring in the opinion of Mr. Justice Brown when district judge, that "the law of general average is confined to those cases wherein a voluntary sacrifice is made of some portion of the ship or cargo for the benefit of the residue, and that it has no application to a contract of towage."

The case was a novel one, and the question certified to the supreme court and answered in the negative had never before been submitted to any court of final jurisdiction. It is a happy conclusion of a long litigation. It would have been most unfortunate if the supreme court had so broadened the doctrine of general average that it could embrace more than a single ship, her cargo and freight list. The doctrine of general average contribution rests upon the established law of the sea, "in the light of and subject to which all owners of ships and cargoes undertake maritime adventures." No principle of law has continued for so long a time in so many different jurisdictions with so few violent modifications. No similar principle obtains outside of maritime law, but from the earliest recorded time to the present seafaring men have been of a single mind, to-wit, that which in the presence of imminent peril has been sacrificed for the good of all, should be made good by the contribution of all. Whether this has its origin in natural justice, or in implied contract or agency, it rests in justice to all "and is older than any other law or rule in force." Every maritime nation in the world has yielded it willing obedience; every owner and every shipper has experienced its beneficence; its age renders it venerable, and bears unassailable testimony of its even justice. To make it applicable to more than a single vessel would have been the extinction of the old principle and the establishment of an entirely new one, and would have introduced anomolies not resting upon the established law of the sea and not to be reconciled with it. This case will undoubtedly be determinative of similar questions arising in the courts of any maritime nation.

Suggestions Regarding Gas Buoys.

A list of places where gas buoys would prove of great assistance to navigation has been submitted to the Lake Carriers' Association by Mr. E. T. Evans, general manager of the Anchor line, who has consulted his captains in the matter. As in other cases, the list include some locations for which gas buoys have already been provided. It is as follows:

Lake Erie--Waverley shoal; Seneca shoal; Grecian shoal; Mouse island reef; Starve island reef; Niagara reef; Erie pier in place of can buoy; Sturgeon point; Dummy light; Grubb's reef, W. N. W. of Dummy light; shoal 3¾ miles S. E. of Point Pelee main light; middle ground at Point Pelee; Little's point, N. W. of Colchester light, and Rose's reef, W. by S. of Buffalo harbor.

Lake Huron—Point Aux Barques reef; Martin's reef; Middle island; Thunder Bay, north point; Mackinaw island, south east end; Raynold's reef, and Shoal W. S. W. of Spectacle reef light.

Detroit River—West bank below Ballard's reef.

St. Clair river—Lower end of Stag island; head of Russell's island; middle ground between Port Huron and Sarnia, and upper and lower ends of Woodtick island.

Straits of Mackinaw—Waugoshance 16-foot shoal; Hog island reef; shoal south of Graham shoal; shoal E. S. E. 1½ miles from Gray's reef lightship; Graham shoals, one on each; Vienna shoal and Cheboygan shoal.

Lake Michigan—Gravelly island shoal; east end of Racine reef; Squaw island shoal; Boulder reef; Poverty island shoal; nine-foot shoal, Rock island passage; Lansing shoal; Milwaukee south point; entrance to So. Chicago; Hyde Park, outer shoal; So. Fox island, 4½ miles south of (13-foot shoal.) Fisherman's shoal; St. Martin's shoal; Garden island shoal; Gray's reef, and Richard's shoal, W. by S. from Beaver island.

Green Bay—Drisco shoal; Peshtigo point; Long Tail point, and Death's Door.

St. Mary's river and Lake Superior—Round island shoal; Pointe Aux Chenes; turning point at upper end of Mud lake; Pointe Aux Pins; middleground, point Iroquois, one at each end; 5-foot shoal, Detour passage; Grand island, east entrance; Grand island, west entrance; S. W. end of Magdalene island, and Dark Hole.

Large Boulder in the Detroit River.

A very large boulder with not more than 16 feet of water over it was found recently in the Detroit river, after it had been struck by two vessels. It is too large to be removed at present with the appliances that are being used for clearing odd shoal spots. This obstruction is abreast of the Ballard's reef light ship, and 20 feet east of the channel indicated by the Duff & Gatfield range, being about 120 feet east of the range line. Vessels should keep to the west of the channel at this point.

The large single-sheet chart of Georgian bay, just issued by the British admiralty, was prepared from the surveys on which Staff Commander J. G. Boulton, R. N., has been engaged for several years past. This chart may be had from the Marine Review for $1.75. The price is higher than is usually charged for navigators' charts, but this one takes the place of probably ten sectional charts and is corrected up to date.

A list of country homes along the south shore of Lake Erie open to summer boarders will be mailed to any one enclosing a two cent stamp to B. F. Horner, general passenger agent of the Nickel Plate road, Cleveland, Ohio. 54 Jul 15

Around the Lakes.

It is expected that the new Union line steamer Starucca, building at the works of the Union Dry Dock Co., Buffalo, will be launched about August 1.

Practically an entire new engine will have to be built for the side-wheel steamer State of Ohio of the Cleveland & Buffao line, as a result of the accident to machinery which occurred on Lake Erie Monday.

Contractors have begun work on the big dredging job within the Duluth-Superior harbors, which will involve an expenditure of $1,650,000. Five dredges will be in operation in this big basin in a few days.

The steamer Neosho is reported to have struck a huge boulder in the Erie basin at Buffalo, near the old elevator, west of the foot of West Genesee street. It is said to be 14 feet long, 6 feet wide and 4 feet high.

The Duluth grain cargo just deliverd at Buffalo by the Wilson line steamer Andrew Carnegie consists of 171,000 bushels of oats, 51,000 bushels of wheat and 55,000 bushels of barley, equal in all to 5,586 net tons.

The sand bar at the entrance to Portage lake ship canal has been entirely dredged away. Dredging is now in progress at Portage entry, Keweenaw bay, and when it is completed there will be 18 feet of water between the piers.

The suit which was begun in the court of common pleas at Cleveland by the Brown Hoisting & Conveying Machine Co. against F. W. Wheeler & Co., ship builders of West Bay City, asking for $15,000 alleged to be due on three promissory notes of $5,000 each, attachments for money in the hands of the Etna Steamship Co., Bessemer Steamship Co. and Pickands, Mather & Co. having been issued, was dismissed, Wednesday, the matter at difference being immediately adjusted upon a meeting of the parties concerned.

Vessel masters did not realize the importance of gas buoys in Pelee passage until they were without them for a few weeks this spring. These buoys are owned by the Canadian goverenment, but as they are of advantage mainly to vessels of the United States, it was understood when they were first established that the Lake Carriers' Association would provide for their maintenance. Gas for the buoys could only be secured through the United States light-house board, and hence the delay, as the light-house officials were undecided as to how far they could go in assisting navigation in Canadian waters.

The office of general manager is to be abolished by the Pittsburgh, Bessemer & Lake Erie Railroad (Carnegie ore line from the lakes), and J. T. Blair, at present occupying that position, will be made general agent. W. K. Richard, general freight agent, and W. G. Sargent, general passenger agent, have tendered their resignations. The offices will be combined, and E. H. Utley, formerly assistant sales agent of the Carnegie Steel Co., Limited, has been appointed to the dual position.

At the sale of the old revenue cutter Andrew Johnson in Cleveland, Tuesday, representatives of naval reserve organizations in Detroit and Chicago were prepared to bid against the Cleveland divisions that bought the boat. It was decided, however, that a struggle for the vessel would result in too much being paid for her, and the Cleveland organization was allowed to take her when the bid reached $2,250. The value of the vessel was a small item with the government, anyhow, and the revenue bureau officials would have given her to the reserves, but for the law in the matter. The reserves of Cleveland are not of the opinion that they have a wonderful bargain in the old cutter. A steam vessel, especially when she is old, requires quite a large annual expenditure in repairs and running expenses, and some members of the naval militia on the lakes are therefore of the opinion that sailing vessels of the kind that can be bought cheap on the coast would render good service as practice ships.

The Marine Review has prepared in neat oak frames cards containing the schedule of time required to be run between certain points in the St. Mary's river under the speed limit of seven miles an hour. When hung in a pilot house, distance and time may be readily noted from these cards, as the type is large. They will be sent by express to any address at $1 each,or may be had upon application at 409 Perry-Payne building, Cleveland, for 65 cents each.

Obstructions and Other Dangers to Navigation.

The postal card scheme of reports from vessel captains regarding obstructions, misplaced buoys, etc., which was inaugurated recently by Geo. L. McCurdy of Chicago in the interests of underwriters generally, is meeting with hearty cooperation from the vessel masters. As many as a dozen reports were made regarding the accident to the light on the lower cluster of piles at Grosse point channel, which was carried away by a passing vessel, but which has since been replaced. Capt. James Gibson suggests that if a red and white light, one above the other, were placed on this cluster of piles, there would be less danger of damage to vessels in event of this light being carried away again. The red and white lights would distinguish the lower cluster, and in their absence vessel masters would know that something was wrong and they would not attempt to enter the channel on the supposition that the second light was the lower one.

Capt. Clint Ennis of the Bessemer line steamer Fairbairn says: "Some method must be provided to warn up-bound vessels at Sailors' Encampment of anything that may be coming down. The first time two boats meet in the new cut at this point, both will be sunk. When there is any wind at all on the river, signals can not be heard. I had a narrow escape from accident at this point on a recent trip, and I think that all vessel masters will agree with me in what I say about this matter.

"Unless the spar buoy at the head of Russell's island, St. Clair river, has been changed very recently," says Capt. M. Folan of the steamer Milwaukee, "I am quite sure that it is too far to the westward. I have seen boats aground with the buoy at the west of them. I should think that it is 200 feet or so out of place, and this is a long distance when boats are passing each other. On May 14 one of the whalebacks was aground at this point and on the 25th the Samoa and consort were on at the same spot. Its the worst place in the St. Clair river and a dangerous hole to make on a dark night. A light at this point in not less than 17 feet of water would be a good thing. The range lights for this passage are red and very low, and on a night when the smoke of passing boats hangs on the water they are hard to be seen, as every captain on the lakes will testify.

Capt. C. Z. Montague of the steel steamer Geo. N. Orr says that his vessel, while only partially loaded and drawing but 16 feet, sustained heavy damage in getting away from the Armour elevator, D slip, south branch at Chicago on May 18. He says that requirements for modern ships are certainly inadequate at Chicago.

Sinclair Stewart of New York, Robert Logan of Cleveland and Edward Gaskin of Buffalo are all well-known naval architects who have had a great deal to do with the construction of vessels on the lakes. These gentlemen made an investigation, some time ago, for the purpose of making a joint report on the steam towing machine of the Shaw & Spiegle type, manufactured by the American Ship Windlass Co. of Providence, R. I. They had all seen the machine in operation on lake vessels, and were aware of its value, but the examination was made anyhow, as the report was to be a formal one. The report, which was recently published, is of a most flattering kind. All three of these gentlemen are connected with societies for the classification of ships, and their view of the machine from an underwriter's standpoint will therefore prove interesting. The report says: "From an underwriter's standpoint the objection to towing large and heavily loaded vessels by ordinary methods is the liability of the towing line or its connections to part upon a sudden strain being brought upon it, leaving the vessel towed pactically helpless for a time, even if provided with efficient masts and sails. With this machine, on the contrary, the towing hawser is run out by automatic action until such a strain is relieved, when the hawser is drawn in by the same means. The testimony that such is the action of the machine in practice is uncontrovertible."

A smooth roadway. Perfect passenger service. Uniformed colored train porters for the convenience of both first and second class coach passengers. Quick time. Through sleeping car service between Chicago, Cleveland, Buffalo, New York, and Boston. A superb dining car service. No change of cars for any class of passengers between Chicago and New York City. Rates lower than via other lines. These are advantages presented by the Nickel Plate road. 47 June 10

An Important Salvage Award.

The decision of Judge Wm. Lochren of the United States court at Duluth in the Arabia-Hadley salvage case has attracted a great deal of attention, on account of a division of the award, in which it is provided that one quarter shall be given to the crew. A copy of this decision is at hand. The libel against the steamer G. G. Hadley was filed by the Western Transit Co., owner of the steamer Arabia, and by R. Murray, master, on behalf of himself and the crew of the Hadley. In a statement of the case the court says that from proofs submitted in answer to the libel it appears that on Sept. 7, 1895, the Arabia was on a voyage from Duluth to Buffalo with a cargo mostly of flour. About 10 o'clock in the morning she sighted a steamship about five miles from the southern coast of Lake Superior and opposite the mouth of Eagle river making signals of distress, and on approaching, found it to be the George G. Hadley, laden with a cargo of wheat and bound from West Superior to Chicago. There was a strong wind blowing from the west-north-west and a high sea, and the Hadley had lost its rudder, and was therefore almost unmanageable and in considerable peril; and the master of the Hadley requested the master of the Arabia to aid in rescuing the Hadley from its dangerous situation. The master of the Arabia at first attempted to tow the Hadley, but after breaking a hawser went to the stern of the Hadley and passed two hawsers from the bow of the Arabia to the stern of the Hadley, and caused the Arabia to act as, and in the place of a rudder, in steering the Hadley, and thus assisted and returned with the Hadley to Duluth, where the damaged vessel was repaired, and the libel for salvage filed.

"The value of the Hadley" says the court, "is admitted to be $70,000, its cargo $45,000 and its freight for the trip $2,450. The value of the Arabia is shown to have been $80,000, its cargo $40,000, and its freight for the trip $2,000. The Arabia was delayed two days in assisting the Hadley at an expense of $125 per day and had one of its hawsers, worth $150, rendered worthless in the same service. The service rendered by the Arabia was plainly a salvage service, in every way meritorious, skillfully performed and deserving of substantial reward. The Hadley was without a rudder, the waves ran high and the wind was strong, driving toward a rocky shore. Its signals of distress showed that its officers and crew regarded its situation and condition perilous. The master of the Arabia assumed considerable risk to his own vessel and cargo from the dangers of collision in such a heavy sea when approaching the other vessel sufficiently near to pass lines to it and render the required aid. He performed the entire service skillfully and with complete success. An award of salvage is necessarily a discretionary award, varying with conditions and circumstances, such as the value of the vessel and cargo saved, and the danger from which it is rescued; the value of the vessel and cargo risked, and the hazard to which it is exposed, the skill employed and the measure of success. Public policy requires that salvage allowances shall be sufficiently liberal to induce seamen, even at much risk and inconvenience, to succor and rescue endangered vessels. In this case as a fair salvage I award to the libellants the sum of $5,000. This will cover the expense of delay, $250; the value of hawser rendered worthless, $150; and 4 per cent. of the value of the vessel and cargo salved. If distributed rateable upon the value of the vessel and cargo the award would be $3,043.50 against the vessel and $1,956.50 against the cargo. But as the bond of claimant is to pay the amount awarded by the final decree against the ship and cargo, such distribution will not be necessary. Of the amount awarded seven-tenths should go to the owner of the steamer Arabia, one-twentieth to the master, and the residue to divide among the master, officers and crew of the same vessel, in proportion to their wages. The libellants are also entitled to costs and to prompt remedy upon the bond."

H. R. Spencer of Duluth was proctor for the libellant in this case and C. E. Kremer of Chicago for the claimant.

Luce's "Seamanship" is a book that is specially suited to assist young officers of the naval reserve. It is being used by naval reserve organizations all over the country. It is a standard work, selling at $10, and will be mailed to any address at that figure by the Marine Review, 409 Perry-Payne building, Cleveland.

The actual weight of the steamer Queen City's big Ashland ore cargo, including the 1 per cent. moisture allowance, was 4,891 gross or 5,477 net tons. This is the largest load of ore ever moved from Lake Superior. It was unloaded at Fairport.

Ship Yard Matters.

The steel steamer Niagara, built for D. O. Mills of New York, A. L. Hall of Bay Mills, Mich., and J. L. Crosthwaite of Buffalo, and launched at F. W. Wheeler & Co's ship yard, West Bay City, on Saturday last, will prove a very substantial vessel. She is double for water ballast fore and aft and her outer bottom is sheathed with oak timber to the upper turn of the bilge. Dimensions are 281 feet over all, 266 feet between perpendiculars, 42 feet molded beam, and 19 feet molded depth of hold, and she is expected to carry 2,500 net tons on a mean draft of 12 feet 10 inches. She is single-decked with plate bulwark 4 feet high, all fore and aft. Engines are of the triple expansion type, with cylinders 17 inches, 29 inches, 48 inches by 36-inch stroke. Power will be furnished by two Scotch marine boilers, 11 feet in diameter and 12 feet long, with a working pressure of 170 pounds per square inch. Steam windlass and capstans of the American Ship Windlass Co's make and an electric light plant of 200 16-candle power lamps are features of the steamer's equipment. The Niagara will be ready for service in a few days.

Repair jobs to steel vessels, which form an important part of the business of the ship yards during the navigation season, seem to be all coming to Cleveland this spring. The new steel barge Constitution, which struck at the Encampment in the Sault river on her first trip down, will be in one of the docks of the Ship Owners' company until probably Saturday of this week. It is unfortunate that the Constitution met with an accident on her first trip, as the excellent workmanship in all parts of the vessel has been favorably commented upon by everybody who has seen her. The survey, which was conducted by Robert Logan for the underwriters and Robert Curr for the owners, provided for the removal of forty futtocks, which were bent considerably and had to be taken out, furnaced and replaced. Forty futtock angles, which were too badly damaged to be put back, were made new, in addition to forty new angles and eleven new plates. The plates are 17 feet long and 5 feet wide.

It is expected that the steel barge building at South Chicago for James Corrigan of Cleveland will be launched Saturday, when she will be prepared to sail immediately. Preparations are also being made for launching the barge which the Globe company of Cleveland is building for Mr. Corrigan, and it is expected that this vessel will go into the water on Tuesday next.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, May 29, 1897:

	Wheat, bushels.	Corn, bushels.
Chicago	5,469,000	5,618,000
Duluth	3,045,000	9,000
Milwaukee	170,000	3,000
Detroit	44,000	2,000
Toledo	792,000	210,000
Buffalo	655,000	507,000
	10,175,000	6,349,000

As compared with a week ago, the above figures show, at the several points named, a decrease of 1,995,000 bushels of wheat and an increase of 1,043,000 bushels of corn.

The case of Henry Scheele, Jr., as owner of the schooner Sunrise, against the steamer William H. Gratwick and whaleback barge 133, in tow of the Gratwick, for the sinking of the Sunrise by collision with the 133 on Lake Michigan, May 21, 1896, was decided by Judge Grosscup on June 1. The Gratwick was exonerated; the 133 was held at fault for not having an efficient bell, and the Sunrise for not altering her course. Several interesting questions, as to the duty of a steamer with tow in fog, the location of bell, etc., were considered, but as the full text of the opinion is not at hand the determination of these questions can not be given.

The efficiency of the passenger service on the Nickel Plate road is meeting recognition on all hands. Solid through trains between Chicago and New York City; elegantly equipped palace sleeping cars; an unexcelled dining service uniformed colored porters on through trains; fast time and rates always the lowest; all combine to make it the most popular line between Chicago, Cleveland, Buffalo, New York and Boston.
49 June 10

MARINE REVIEW

DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, Ohio, by John M. Mulrooney and F. M. Barton.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, $1.00. Advertising rates on application.

Entered at Cleveland Post Office as Second class Mail Matter.

The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels	1,792	924,630.51
Sailing vessels and barges	1,125	354,327.60
Canal boats	416	45,109.47
Total	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30. 1891	204	111,856 45
" " " 1892	169	45,968.98
" " " 1893	175	99,271.24
" " " 1894	106	41,984.61
" " " 1895	93	36,352.70
" " " 1896	117	108,782.38
Total	864	444,216.36

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (*From Official Reports of Canal Officers.*)

	St. Mary's Falls Canal.			Suez Canal.		
	1895*	1894	1893	1895	1894	1893
No. vessel passages	17,956	14,491	11,008	3,434	3,352	3,341
Tonnage, net registered	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of navigation	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about ¼ per cent. of the whole, but largely in American vessels.

Within the past few days the heads of several leading houses connected with iron ore and pig iron interests in Cleveland have expressed the opinion that the turning point in business has been reached, and that, although improvement may be slow, it will be of a steady and substantial kind during the balance of the year. This same opinion from other quarters is reflected in the trade journals. In its latest review of market conditions, the Iron Age of New York says: "A careful study of the situation in the central west will, we believe, develop the fact that in the cruder products bedrock in prices has now been reached. Iron ore is as low as it can be laid down at lower lake ports, wages and freights having touched the point where no further lowering seems possible this season. The only chance is that ore freights from receiving ports to furnaces will be lowered and the freight on coke be cut down. Coke is as cheap at $1.25 at oven as can be expected. With any reasonable allowances for depreciation of plant, taxes etc., the conversion from pig to billet is at a minimum. Merchants have ceased selling ahead with the idea of covering at lower prices later on, that having become an operation offering very little chance for profit commensurate with the risks of losses involved. The price of billets is now the lowest on record, counting not alone our own country, but considering also the leading European producing countries. It has reached that point because every vestige of profit has been squeezed out of the business, from the ore in the ground up. Along the whole line every interest would demand and would be entitled to some compensation for capital and skill employed in the business at the first hint of an improvement. These are conditions which favor rapid advances when the turn does come. It makes the majority of sellers conservative as to future engagements at present prices."

Fairplay of London says that lake hull insurance of the McCurdy-Prime syndicate has been placed about as follows: Indemnity Insurance Co., 50 per cent.; St. Paul Fire & Marine, 5 per cent.; Insurance Company of North America, 10 per cent.; National Standard of New York, 15 per cent.; and for the remaining 20 per cent. are given contract notes on behalf of the World Marine Co. and F. W. Marten's names at Lloyd's. The London journal, which is a great sticker for profitable insurance rates, adds this comment to the foregoing announcement: "It will thus be seen that while London underwriters as a whole were crying out for higher rates, the business was being scooped, not by foreign competition, but by an old London insurance company backed up by another of more recent establishment and by a philosophic gentleman at Lloyd's. It would seem that underwriters desiring an improvement in rates should look at home for a cure of the evil instead of crying out about the competition they have to contend with from outsiders."

The story of a bottle message from Capt. John McKay of the steamer Manistee, which was telegraphed all around the lakes from Bayfield, Wis., several days ago, was what is known as a newspaper "fake." This is proven by an investigation made by Capt. Geo P. McKay of Cleveland, who secured the piece of paper containing the alleged message from his lost brother, and who sought out other facts from Bayfield. The newspaper correspondent who is at this late day "taken in" by bottle-message fiends is hardly fit for the work in which he is engaged. He is an object of sympathy, but it is different with the fellow who invents such stories in order to get a few dollars from the dispatches which he sends out. A law should be found to apply to this latter class.

Colgate Hoyt, president of the American Steel Barge Co., has purchased a steam yacht that is building at the ship yard of T. S. Marvel & Co., Newburg, N. Y. The vessel is 95 feet over all, 71 feet waterline, 14 feet 6 inches beam, and 5 feet 6 inches draught. She has triple expansion engines with cylinders 6, 10 and 16 inches in diameter, and 10 inches stroke of piston. Steam will be supplied by Almy boilers.

The annual report of the Pacific Mail Steamship Co., just issued, shows no debt except current expenses, with cash on hand April 1 aggregating $1,108,146. These directors were elected: Collis P. Huntington, Henry Hart, Isaac E. Gates, Calvin S. Brice, Samuel Thomas, Joseph Richardson, Russell Sage, Geo. J. Gould and R. P. Swerin.

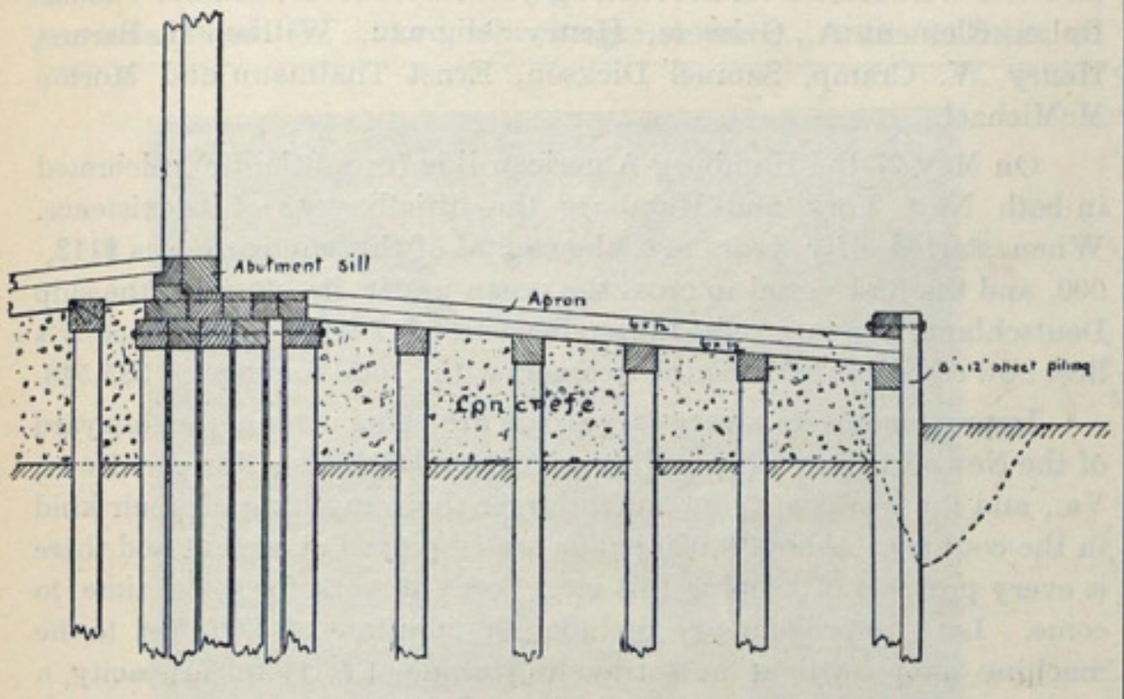
Roby-Florida Collision Case.

In a libel against the steamer Roby and her consort, the W. D. Becker, filed in the United States district court at Detroit, the owners and underwriters interested in the sunken steamer Florida claim damages aggregating $172,400. This includes the value of freight list and the crew's effects. The papers assert that at 8:45 in the morning of May 20, the time of the collision, the Florida was in every particular obeying the rules of navigation; that she was in nowise at fault; that a heavy fog was on; that after passing Presque Isle the Florida took a course a little to the east of the chart course, changing it only on receiving a signal from the Roby; that the Florida proceeded on the course under a slow, checked speed, continually sounding the fog signals as required by law, with a close watch maintained; that a passing signal of two whistles was heard from the Roby, seeming to come from a little forward and a little to the starboard of the Florida, and not far away. The Florida put her wheel to starboard and answered with two whistles, which was answered by the Roby. Soon thereafter a checking signal and a reversing signal in quick succession were heard from the Roby, as the latter came into view through the fog. The Roby was then close to the Florida, going at apparently full speed and heading to the starboard side of the latter. The Florida had commenced to swing under a starboard helm immediately after the first exchange of signals, and continued to so swing until struck by the Roby; but the latter, as she came into view of those on the Florida, was not swinging under such helm, and evidently had not altered her course as required under her starboard signal. The Roby was hailed to starboard her helm, but instead of doing so she came on at great speed, and crashed stem on into the starboard side of the Florida, striking the latter a little abaft of amidships and causing her to sink within a short time. The Florida's owners claim that at no time were any fog signals heard from a bell, as is required from schooners being towed; that prior to the collision no fog signals of any kind—so that the location and course of such tow could not be calculated and determined—were heard from either the steamer or her consort; that the fog and passing signals of the Florida were all given by loud and distinct blasts of a good and sufficient steam whistle; that a watch on the Roby should have heard the Florida's fog whistles and thus have located her a long time prior to the time they blew their first two-blast signal on the Florida; that though it was thick and foggy at the time the conditions were favorable for sounds to be heard a long distance.

The Review has excellent photographs of lake ships.

Leak in a Big Timber Dry Dock.

Recent developments in the investigation of the leaking dry dock at the Brooklyn navy yard have turned the attention of the engineers in an entirely new direction in their search for the exact location of the leak. There is now good reason to believe that, whatever seepage may be taking place from the old timber basin and buried cribs on the nothern side of the dock, the bulk of the water is passing into the dock beneath the apron which extends from the outer sill into the entrance channel. This is rendered probable by the behavior of the water when the dock was pumped dry for examination, and several of the



altar timbers on the north side were wrenched from their seating by the great hydraulic pressure and thrown into the dock. The sudden relief thus presented allowed all the water behind the altars to empty itself into the dock, and it was noticed that not only did the larger leaks on the north side stop running, but the streams of water were lowered on all sides of the dock at once, thus proving that the bulk of the water came from some particular quarter in the vicinity of the entrance. A diver was sent down to examine the apron on the outside of the caisson gate, and he found that a hole had been torn open at the outer edge of the apron, exposing the underlying bed of concrete, and that a large hole had been formed in the bottom mud of the channel around the damaged structure.

By referring to the accompanying diagram it will be seen that the dock could not have been damaged in a more vital spot. The cut represents a sectional view of the entrance to the dock and shows the manner of finishing off the structure to a connection with the natural mud bottom of the entrance channel. The foundation of the apron is somewhat similar to that of the whole floor of the dock. It is carried on piles which are capped with 12-inch by 12-inch timbers. A solid bed of concrete from 3½ to 5 feet in thickness is worked in around the heads of the piles and finished off flush with the top of the caps. The flooring of the apron consists of two layers of 6 by 12-inch timbers laid to break joints, the outer edge of the floor being flush with the cap of the outer line of piles. A wall of 8 by 12-inch sheet piling is driven across the entrance in snug contact with the edge of the apron, each pile being bolted to a 12 by 12 stringer on top of the apron.

The construction of the dock was carried on from the inshore end toward the channel, and the apron was built while there was yet a couple of hundred feet of solid ground between it and the Wallabout channel. The removal of this material was done by a floating steam dredge, and it is supposed that, in excavating the channel near the apron, the bucket caught the edge of the apron, tearing up the sheet piling and breaking away a portion of the concrete and the timber flooring. The water was now free to enter beneath the concrete floor and work its way along the sides of the dock. Under the great head of from 26 to 29 feet, the pressure upon the structure would be enormous, and would easily account for the bursting in of the walls. If, as is reasonably supposed, this is the cause of the leak, the dock can be rendered serviceable for a much smaller sum of money than has been named even if it should be necessary to go to the expense of building a temporary dam across the mouth of the entrance channel.—Scientific American.

Christian Endeavor Excursion to California—Sleeping car reservations are now made from Chicago via all lines, and all information is given for this wonderfully low rate to California at Nickel Plate city ticket office, 189 Superior street, Cleveland. Call early. 71 June 30

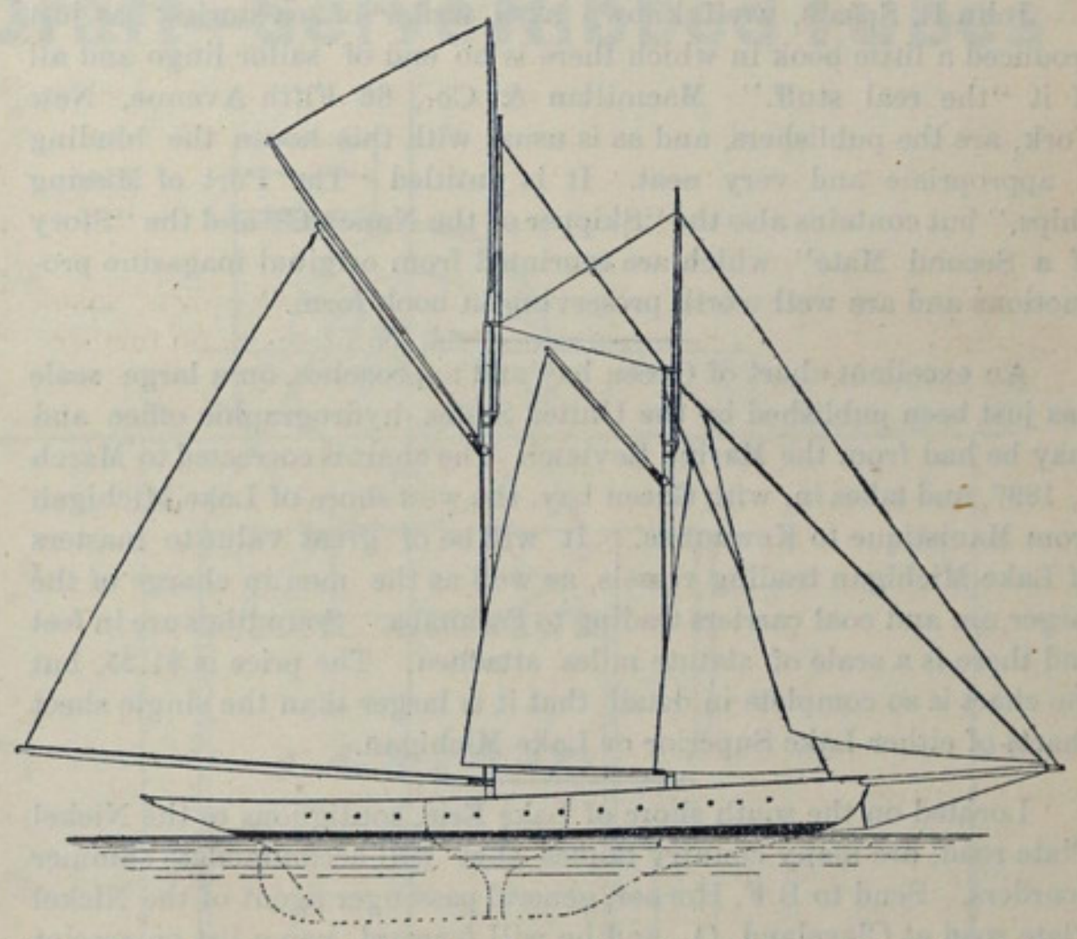
Sault River Ranges.

Commander Wm. M. Folger of Detroit, inspector of the eleventh light-house district, is considering the advisability of recommending a change in the range lighs at the mouth of St. Mary's river—Frying Pan and Pipe islands. In a letter to Capt. Geo. P. McKay of Cleveland he asks for an opinion in the matter. "I think of recommending" he says, "to have the lights white instead of red, and more powerful lenses substituted. They seem small and of little value, to me. Would white be liable to confuse with the lights at Detour?"

Capt. McKay does not feel at liberty to suggest a change in these ranges in advance of a consideration of the question by vessel masters, and will be pleased to submit to Commander Folger any opinion that he may receive from captains of vessels trading to Lake Superior.

A Millionaire's Sailing Yacht.

About July 1 there will be launched at the ship yard of the Harlan & Hollingsworth Co., Wilmington, Del., a keel schooner yacht, built of steel, that will be the most costly and elegant sailing pleasure craft in the world. The vessel is being built for Mr. Geo. W. Weld of Boston. Although she will have a big sail plan, she will not be a cup hunter, but rather an elegant summer home. The accompanying illustration of the new vessel is from the New York Herald. Her dimensions are as follows: Length over all, 136 feet; on load water line, 105 feet; breadth of beam, 26 feet; draft of water, about 16 feet; least freeboard to rail, 4 feet 8 inches; rail, amidships, from deck, 2 feet 4 inches; width across the taffrail, 12 feet 3 inches; overhang, aft, 20 feet; overhang, forward, 11 feet. The vessel will have about 90 tons of lead in her keel. The hull is divided into several watertight compartments. Spars have been selected with the greatest care, and are exceptionally fine sticks. The mainmast, from deck to cap, is 88 feet; the foremast, deck to cap, about 79 feet; the maintopmast, 54 feet; the foretopmast, 46 feet; the main boom, 88 feet; bowsprit, outboard, 36 feet; length of spinnaker boom, 68 feet, while the hoist of the mainsail is 60 feet and the head of that sail 50 feet. She will have a lug foresail. The interior of this yacht will be equal to that of



the finest steam yachts to be found on the Atlantic coast. The main saloon will be 16 feet 6 inches long and will extend the full width of the ship, while the room designed for the owner is 10 feet long and also of the width of the ship. These rooms, as well as all staterooms, will be finished mainly in mahogany. The forecastle is capable of comfortably quartering sixteen sailors.

F. W. Wheeler & Co. of West Bay City have just placed an order with the American Ship Windlass Co. of Providence, R. I., for a steam towing machine, a steam pump brake windlass with iron towing bitts and a large steam capstan for the tug which they are building for Messrs. Wilmot of New Orleans.

An invitation from John H. Dialogue & Son announces the launch of the composite screw gunboat Princeton at their ship yard on Thursday, June 3.

Speed and Cargo Records—Lake Freight Steamers.

Iron Ore—Coralia, Mutual Transportation Co. of Cleveland, 5,088 gross or 5,699 net tons, Gladstone to Ashtbuala, draft of 16 feet 10 inches. From Lake Superior—Steamer Queen City, A. B. Wolvin of Duluth, 4,891 gross or 5,477 net tons, Ashland to Fairport.

Grain—Steamer Queen City, A. B. Wolvin of Duluth, 207,000 bushels of corn, equal to 5,796 net tons, Chicago to Buffalo, 16 feet 8 inches draft. From Lake Superior--Steamer Andrew Carnegie, Wilson Transit Co. of Cleveland, 171,000 bushels of oats, 51,000 bushels of wheat and 55,000 bushels of barley, equal to 5,586 net tons, Duluth to Buffalo,16 feet 1½ inches draft; steamer Crescent City, A. B. Wolvin of Duluth, 318,000 bushels of oats, equal to 5,088 net tons, Duluth to Buffalo.

Coal—Schooner Aurania, John Corrigan of Cleveland, 5,003 net tons bituminous, Toledo to Sheboygan; steamer Andrew Carnegie, Wilson Transit Co. of Cleveland, 4,997 net tons of bituminous, Cleveland to Sheboygan, draft of 15 feet 2 inches.

Speed—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Centurion, Hopkins Steamship Co. of St. Clair, Mich. Buffalo to Duluth, 997 miles, 65 hours and 10 minutes, 15.3 miles an hour.

Although the coal producers of the Ohio & Pittsburg disricts that engage in the lake trade are claiming that the soft coal shipped out of Buffalo by the Buffalo, Rochester & Pittsburg Railroad Co. is of an inferior grade, it is quite evident that they fear competition from the Buffalo shipments. They are trying to secure a reduction in rail rates from mines to Ohio ports on account of Buffalo's new industry. W. P. De Armitt, president of the New York & Cleveland Gas Coal Co., says that the Buffalo company is shipping coal to the lake front for $1.50 per ton, while the best the Pittsburg shippers can do is to deliver coal at Cleveland and other ports at $1.55. The railroad companies tapping the Pittsburg district have so far refused to concede a reduction in rates on account of the Buffalo factor.

John R. Spears, well known as a writer of sea stories, has just produced a little book in which there is no end of sailor lingo and all of it "the real stuff." Macmillan & Co., 66 Fifth Avenue, New York, are the publishers, and as is usual with this house the binding is appropriate and very neat. It is entitled "The Port of Missing Ships," but contains also the "Skipper of the Nancy C" and the "Story of a Second Mate" which are reprinted from original magazine productions and are well worth preserving in book form."

An excellent chart of Green bay and approaches, on a large scale has just been published by the United States hydrographic office and may be had from the Marine Review. The chart is corrected to March 1, 1897, and takes in, with Green bay, the west shore of Lake Michigan from Manistique to Kewaunee. It will be of great value to masters of Lake Michigan trading vessels, as well as the men in charge of the larger ore and coal carriers trading to Escanaba. Soundings are in feet and there is a scale of statute miles attached. The price is $1.25, but the chart is so complete in detail that it is larger than the single sheet charts of either Lake Superior or Lake Michigan.

Located on the south shore of Lake Erie, contiguous to the Nickel Plate road, are many country homes that will accommodate summer boarders. Send to B.F. Horner, general passenger agent of the Nickel Plate road at Cleveland, O., and he will forward you a list on receipt of a two cent stamp. 56 Jul 15

The Bessemer Steamship Company

Solicits Catalogues, Prices and Discounts from manufacturers and wholesale dealers in Ship Machinery, Brass Goods, Rope, Paints, Asbestos, Packing, Hose, Furniture, Piping, Glass and Crockery, Tinware, Ranges, Carpeting, Bedding, Life-preservers, Rafts and Boats, Engineers' Supplies and Tools, Carpenters' Tools, Electric Supplies, Lamps, Grate Bars, Castings, etc., etc., etc.

ALSO QUOTATIONS from Market men and Grocers on the Lakes for Provisions and Meat, best quality only.

CATALOGUES without quotations are not wanted.

ALL GOODS except provisions to be delivered in Cleveland.

Address L. M. BOWERS, General Manager,
CLEVELAND, OHIO.

In General.

John Jones, one of the founders of the Pusey & Jones Co., ship builders of Wilmington, Del., died a few days ago. He was in his eightieth year.

A card from Horace See and W. H. Jaques, consulting engineers, announces a dissolution of their association in business. The offices at No. 1 Broadway will be retained by Mr. See.

At the annual meeting of the Wm. Cramp & Sons Ship & Engine Building Co. of Philadelphia, held a few days ago, the following directors were elected for the ensuing year: Charles H. Cramp, Thomas Dolan, Clement A. Griscom, Henry Seligman, William H. Barnes, Henry W. Cramp, Samuel Dickson, Ernst Thalmann and Morton McMichael.

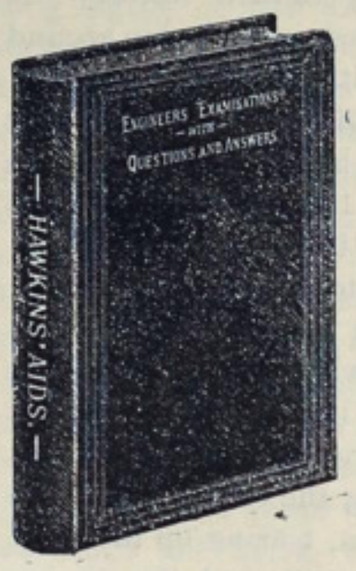
On May 27 the Hamburg-American line (transatlantic) celebrated in both New York and Hamburg the fiftieth year of its existence. When started fifty years ago, the capital of this company was $112,000, and the first vessel to cross the ocean under its flag was the ship Deutschland, a square-rigged three-master of 717 tons. The company's fleet now consists of sixty-nine steamers with a total tonnage of 335,543.

Improvements on a very large scale are being made at the ship yard of the Newport News Ship Building & Dry Dock Co., Newport News, Va., and the works are now much larger than anything of their kind in the country. About 3,000 hands are employed at present and there is every prospect of keeping this large force at work for some time to come. Late improvements include an addition of 200 feet to the machine shop, with a new traveling crane of forty tons capacity, a revolving derrick of 140 tons capacity and some twenty-five or thirty new tools of different kinds.

A small circular representing excellent taste in color printing has just been received from the Peerless Rubber M'nfg. Co., 16 Warren street, New York. It is descriptive of the chief specialties of the company—Rainbow, Honest John, Hercules and Peerless packings, and Eclipse Sectional Rainbow gaskets.

UNITED STATES ENGINEER OFFICE, Detroit, Mich., May 23, 1897. VESSEL OWNERS AND MASTERS are cautioned against passing at HIGH SPEED through the improved 20-FOOT CHANNEL IN LAKE ST. CLAIR, as such speed threatens the durability of the improvement and the safety of navigation. It is hoped that this caution may induce owners and masters to co-operate in so reducing speed through this channel that the promulgation of restrictive regulations may not become necessary.

By order of the SECRETARY OF WAR.
G. J. LYDECKER, Lt. Col., Corps of Eng'rs, U. S. A. July 1



"Engineers' Examinations"

With Questions and Answers.

Printed on heavy paper and bound in red leather.

Anv young engineer, greaser or fireman ought to have it.

Sent postpaid to any address, on receipt of $2.00.

MARINE REVIEW,
410 Perry-Payne Bldg.,
Cleveland, O.

"Maxims and Instructions for the Boiler Room," $2.50
"Hand-Book of Calculations for Engineers,".... 2.50

Chas. E. & W. F. Peck,

58 William St.
NEW YORK CITY.

812 Royal Insurance Building,
CHICAGO, ILL.

C. T. BOWRING & CO.,
5 & 6 Billiter Ave., E. C.
LONDON, ENG.

INSURANCE.

BROWN & CO.,
202 Main St.,
Buffalo, N. Y.

J. G. KEITH & CO.,
138 Rialto Bldg.,
Chicago, Ill.

LA SALLE & CO.,
Board of Trade Bldg.,
Duluth, Minn.

Are prepared to make rates on all classes of Marine Insurance on the great lakes, both CARGOES and HULLS.

"GREAT LAKES REGISTER."

F. D. HERRIMAN, Surveyor-General, Chicago, Ill.

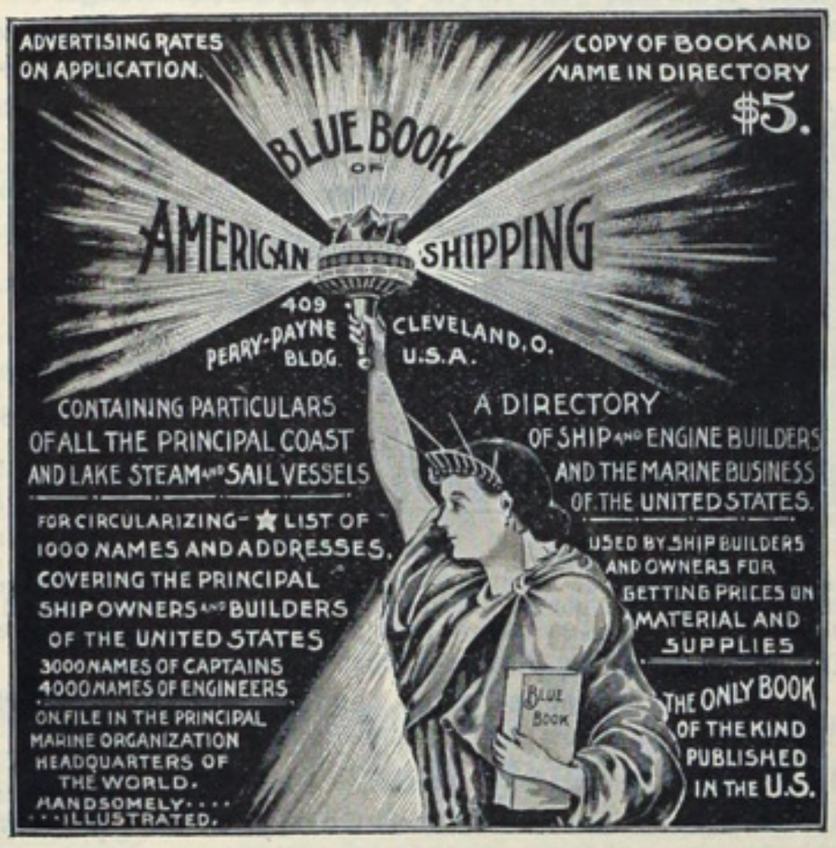
PROPOSALS FOR STEAM TENDERS, MISsissippi River Commission, 2732 Pine Street, St. Louis, Mo., May 25, 1897. Sealed proposals, in triplicate, for construction of three stern-wheel Steam Tenders will be received here until 12 o'clock noon, standard time, June 24, 1897, and then publicly opened. Information furnished on application. H E. WATERMAN, Capt. Engineers, Sec'y, June 18

FOR SALE.

The Finest Sail Yacht on the Chain of Lakes,

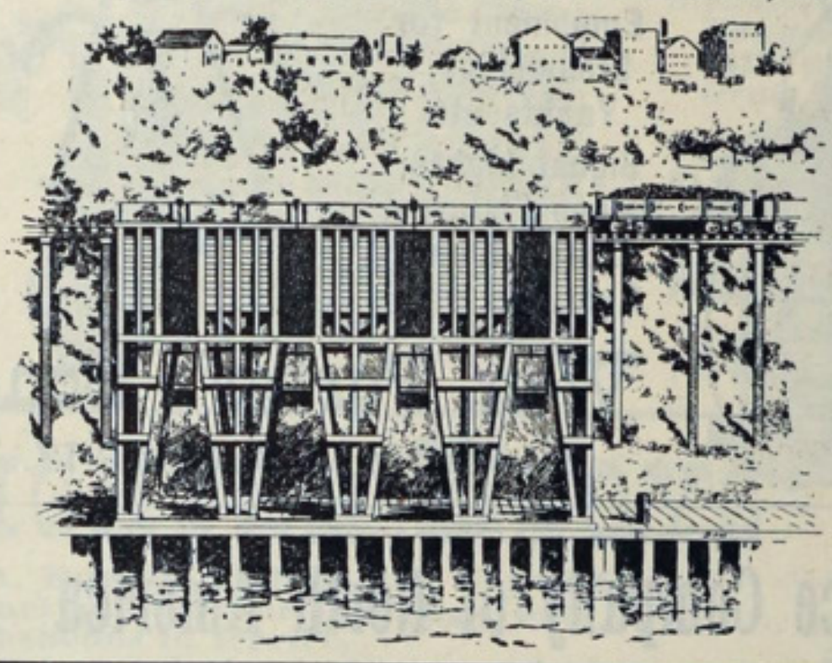
Fast, Able and Seaworthy, will be sold at a great sacrifice, furnished complete.

Address, R. M. H., 1211 New England Bldg., CLEVELAND, O


ADVERTISING RATES ON APPLICATION.
COPY OF BOOK AND NAME IN DIRECTORY $5.
BLUE BOOK OF AMERICAN SHIPPING
409 PERRY-PAYNE BLDG.
CLEVELAND, O. U.S.A.
CONTAINING PARTICULARS OF ALL THE PRINCIPAL COAST AND LAKE STEAM AND SAIL VESSELS
A DIRECTORY OF SHIP AND ENGINE BUILDERS AND THE MARINE BUSINESS OF THE UNITED STATES.
FOR CIRCULARIZING - ★ LIST OF 1000 NAMES AND ADDRESSES, COVERING THE PRINCIPAL SHIP OWNERS AND BUILDERS OF THE UNITED STATES
3000 NAMES OF CAPTAINS
4000 NAMES OF ENGINEERS
ON FILE IN THE PRINCIPAL MARINE ORGANIZATION HEADQUARTERS OF THE WORLD.
HANDSOMELY.... ...ILLUSTRATED.
USED BY SHIP BUILDERS AND OWNERS FOR GETTING PRICES ON MATERIAL AND SUPPLIES
THE ONLY BOOK OF THE KIND PUBLISHED IN THE U.S.
BLUE BOOK

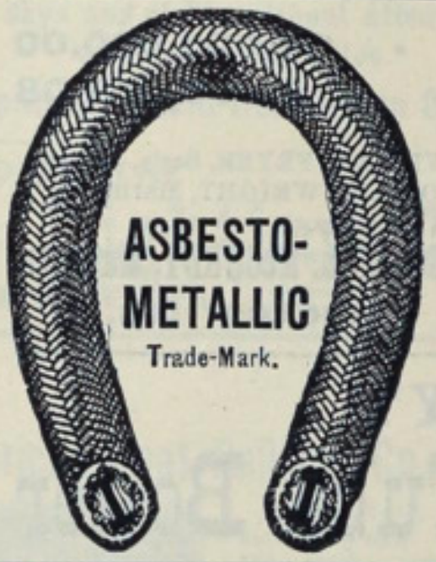
FUEL DOCKS OF OSBORNE, SAEGER & CO.

Cuyahoga River, just above Superior St. Viaduct, Cleveland, O.



Best Youghiogheny Steam Coal Furnished Day or Night. No delay as Elevated Pockets are used.

Telephone 1106.



Lucky is the Engineer Who Uses

ASBESTO-METALLIC PACKING

It is in use on more lake steamers than any other, because it meets the requirements.

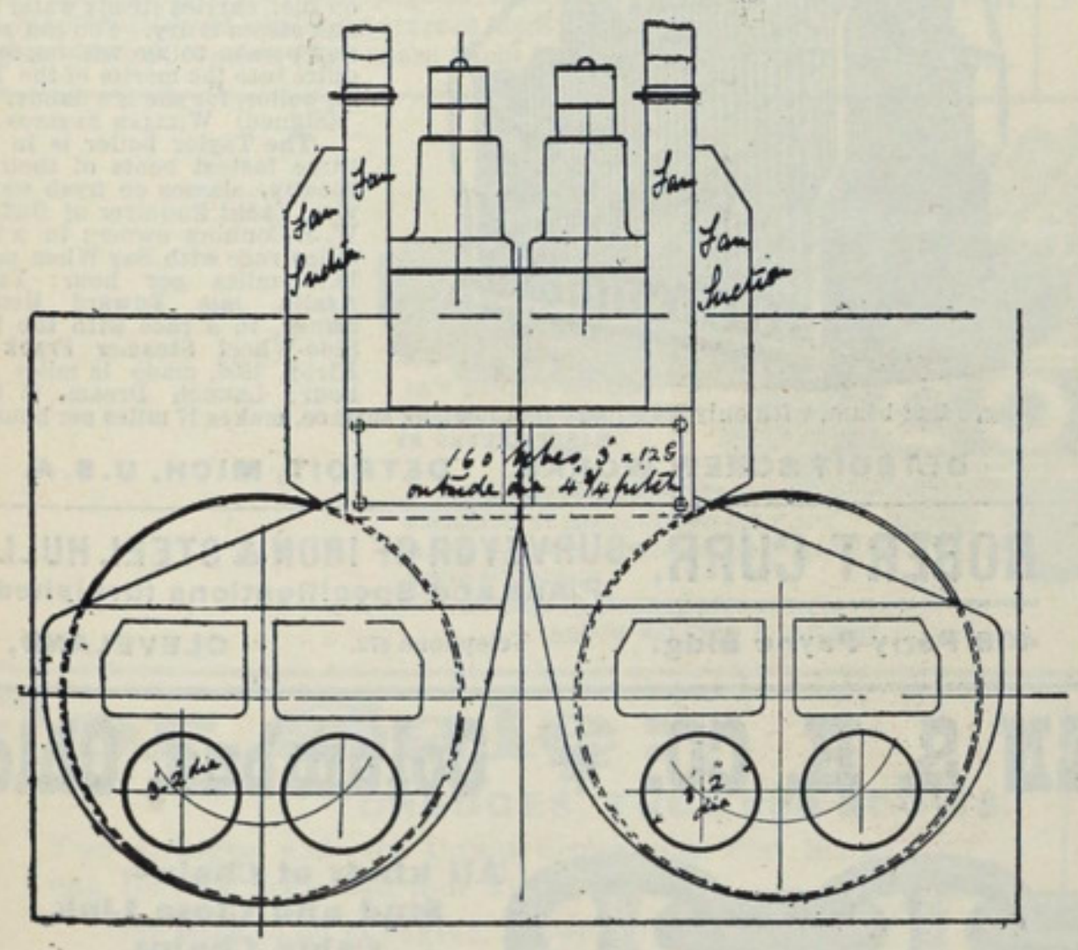
AMERICAN STEAM PACKING CO.,

Original Manufacturers of

PISTON PACKINGS,

60 Federal St., BOSTON, MASS

The Ellis & Eaves Induced Draft---Serve Ribbed Tubes



DRAWING SHOWING PLAN FOR ADDING THE ELLIS & EAVES DRAFT TO LAKE STEAMERS.

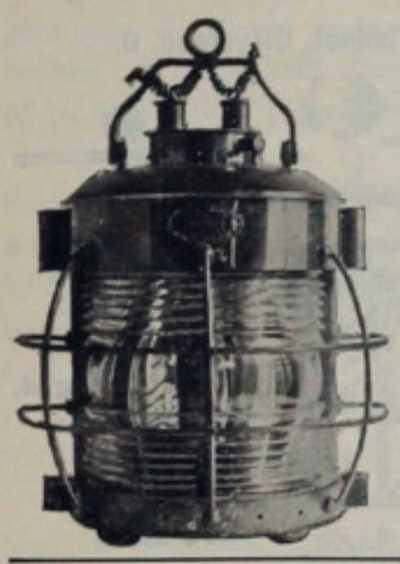
THIS SYSTEM OF DRAFT, WITH THE SERVE TUBES, SAVES MONEY.

SAVES	25 Per Cent. of Your Fuel Bills.
A $ $ $ A	40 to 50 Per Cent. Boiler Capacity.
V $ $ $ V	The Life of the Boiler by Drawing Gases through Tubes.
E $ $ $ E	Firemen and Incidentally their Wages.
SAVES	Cargo Space by Using a Smaller Number of Boilers.

For PARTICULARS and PRICES of applying to Steamers already Built and to Steamers Building, apply to

THE GLOBE IRON WORKS COMPANY, CLEVELAND, OHIO.

MARINE LAMPS



Oil and Electric Equipment for Steamships, Yachts, etc.

Signal Lights, Saloon Fixtures, Cabin Lamps, Lanterns, etc.

Wm. Porter's Sons,

271 Pearl St., NEW YORK CITY.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, Paid up in Cash, - - $3,000,000.00
ASSETS, . - - - - - - - - 9,686,808.08

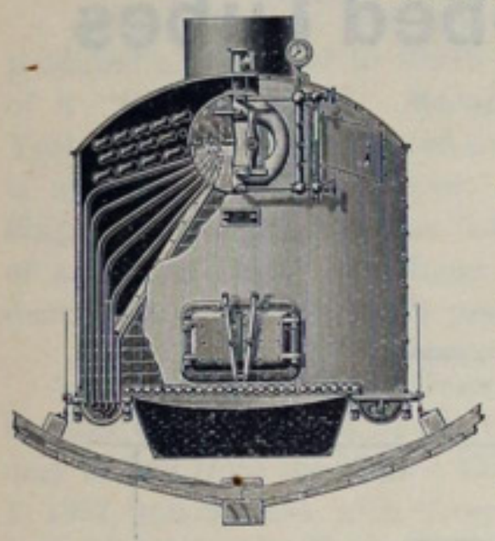
CHARLES PLATT, President. GREVILLE E. FRYER. Sec'y. & Treas.
EUGENE L. ELLISON, Vice-President. T. HOWARD WRIGHT, Marine Sec'y.
JOHN H. ATWOOD, Assistant Secretary.

Lake Marine Department.

GEORGE L. McCURDY, Manager
CHICAGO, ILLS.

SEABURY'S
Safety Water Tube Boiler

For all types of Steam Vessels and Stationary Plants.



Reliable, Safe, Durable, Compact, Light Weight, Economical, Easily Managed.

Tubes may be readily cleaned, internally or externally.

Marine Engines,

STEAM and SAIL YACHTS,
THE ONLY NAPHTHA LAUNCH.

Gas Engine & Power Co. and Charles L. Seabury & Co. Consolidated.

MORRIS HEIGHTS, NEW YORK CITY.

G. H. FOSTER, Prest. MARK H. HANLON, V.-Prest. & Secy. W. H. WARNER, Treas.
DAVID BARNHISEL, Gen'l Mgr.

The Inter-Ocean Coal & Coke Co.

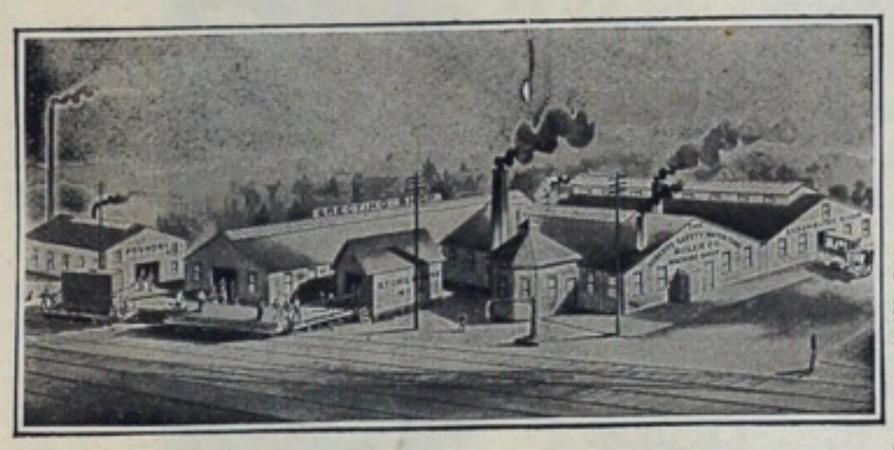
General office, 513 Perry-Payne Bldg., Cleveland.

PRODUCERS AND SHIPPERS.

Choicest Grades of YIOUGHIOGHENY COAL
FOR STEAMBOAT FUEL.

Lighter in Cleveland Harbor of 400 tons capacity.

CLEVELAND DOCKS, just north of Main Street bridge.
SAULT RIVER DOCK, just above Detour, known as Watson dock



Office of
AMERICAN STEEL BARGE CO.

West Superior Wis.,
Oct. 31, 1895.

The Roberts Safety Water-Tube Boiler Co., 39 and 41 Cortlandt St., New York.

Gentlemen: Replying to yours of the 28th I am glad to say that the boiler you furnished us for tug "ISLAY" is giving entire satisfaction. I have heard no complaint about it whatever, but have heard a good deal in its favor. I ride on the boat frequently and must say that I am much pleased with its work. Very Truly yours, Alexander McDougall, General Manager.

THE ROBERTS BOILER is the Cheapest, Best and Lasts Longest.

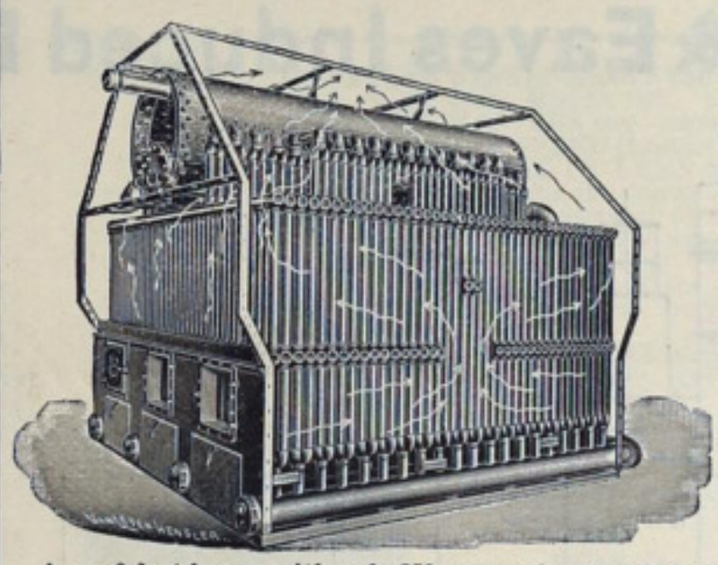
Adapted for use in Yachts, Launches, and Vessels of all Kinds.

Handsome Illustrated Circular sent free on application to

The Roberts Safety Water Tube Boiler Co.,

WORKS, RED BANK, N. J. 39 & 41 Cortlandt St., NEW YORK.

TAYLOR PATENT UPRIGHT WATER TUBE BOILER.



Chief Engineer Skelton of Steam Yacht Enquirer writes: "I can honestly say, that the Taylor boiler is the best boiler I ever handled, and I have been in the business 18 years. It is light on fuel, carries steady water line and steam is dry. You can refer any person to me wishing to inquire into the merits of the Taylor boilor, for she is a dandy."
(Signed) WILLIAM SKELTON, Jr.

The Taylor boiler is in the three fastest boats of their respective classes on fresh water, viz., Yacht Enquirer of Buffalo. W. J. Connors owner; in a 29½ miles race with Say When made 18.78 miles per hour; Yacht Azalia, late Edward Henkel owner, in a race with the fast Side-Wheel Steamer Frank E. Kirby, 1896, made 18 miles per hour; Launch Dream, 63 feet long, 9 feet beam, with only 350 square feet heating surface, makes 17 miles per hour.

MANUFACTURED BY
DETROIT SCREW WORKS, DETROIT, MICH, U.S.A.

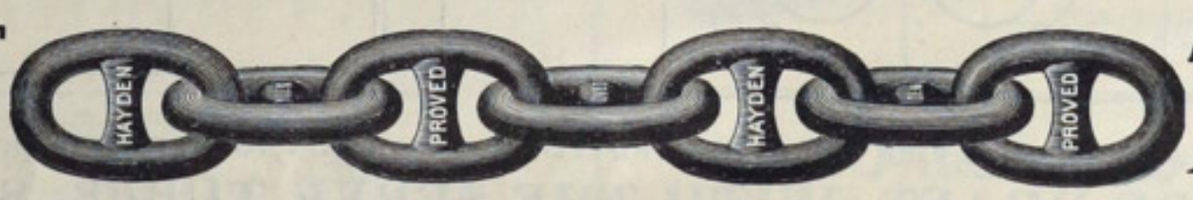
ROBERT CURR, SURVEYOR OF IRON & STEEL HULLS,

Plans and Specifications furnished.

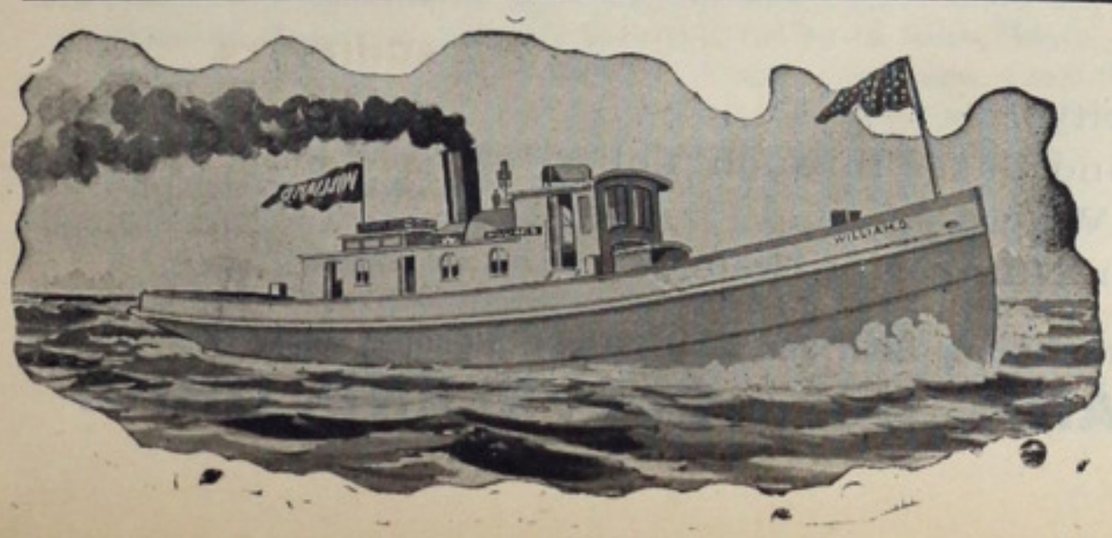
409 Perry-Payne Bldg. Telephone 472. CLEVELAND, O.

Chain Department ✻ P. HAYDEN S. H. CO. ✻ Columbus, Ohio.

Our Chain in use on the Largest Steamers on the Lakes:
The Zenith City, Victory, North West and North Land, and many others.



All kinds of Chain—
Stud and Close Link,
Cable Chains.
Write for Prices.



C. E. GROVER, Prest.
D. R. HANNA, V. Prest.

W. A. COLLIER, Sec. & Treas.
CAPT. PHILIP SHIED, Marine Supt

The Ashtabula Tug Co.

MAIN ST. BRIDGE, CLEVELAND, O.

Incorporated.
W. A. COLLIER, Gen. Mgr.

CLEVELAND, Tel. 409. ASHTABULA, Tel. 149.

CHICAGO.

BARRY BROS.

Independent Tug Line.

TUGS

Rita McDonald, Crawford, C. M. Charnley, D. P. Hall, Ira O. Smith.
Wm. Dickinson, W. H. Wolf, Welcome, Commodore, Jack Barry.

Office, 240 South Water Street,

Telephone Main 273.

3 long whistles call our tugs.

DULUTH.

BARRY

Towing & Wrecking Co.

TUGS.

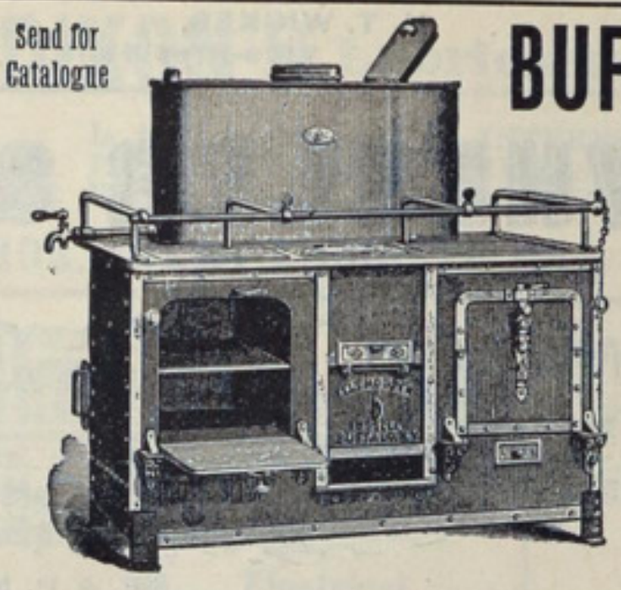
G. A. Tomlinson.
Industry,
Violet H. Raber,
Prodigy.

Office, foot of 5th Ave., West.

Telephone 544.

3 long whistles call our tugs.

Send for Catalogue



BUFFALO WROUGHT STEEL RANGES

Steamboat and Vessel Ranges and Boilers, with patent Rotary Grate.

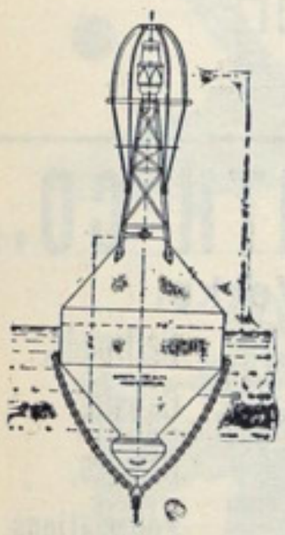
SOMETHING NEW AND GOOD.

We also carry the STAMFORD TUG AND YACHT GALLEY STOVES.

RUSSELL & WATSON

Successors to Felthousen & Russell.

145 Main St., BUFFALO, N. Y.



PINTSCH GAS LIGHTED BUOYS

Adopted by the English, German, French, Russian, Italian, and United States Light House Departments, for Channel and Harbor Lighting; over 500 gas buoys and gas beacons in service.

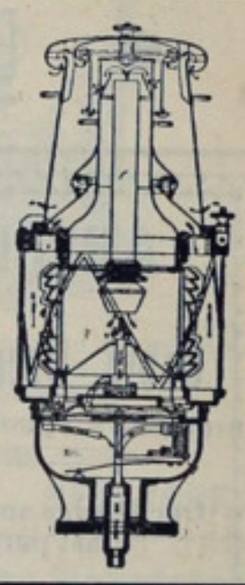
BURN CONTINUOUSLY from 80 to 365 days and nights without attention, and can be seen a distance of six miles.

Brilliant and Steady Illumination. Economical and Reliable in Operation.

CONTROLLED BY THE

Safety Car Heating & Lighting Company,

160 BROADWAY, NEW YORK CITY.



WILLIAM WILFORD'S MATCHLESS WATERPROOF CLOTH Trade Mark.

WM. WILFORD'S

Matchless Water-Proof Canvas.

The best in the market for Hatch Covers, is stronger lighter and more durable than any Water-Proof Goods yet produced. It is made of a twisted thread of pure flax which renders it very strong. It will not crack like Cotton Goods or take fire as easily, which is a great advantage, if soft coal is used.

EDWARD A. BUNKER,

Room 617, 27 & 29 WILLIAM ST., NEW YORK.

JOHN HAUG, Consulting Engineer and Naval Architect.

Ship and Engineer Surveyor Lloyds Register, London. 206 Walnut
Plans, Specifications and Superintendence of Ships and their Machinery. Place,
specialties—Bulk Oil Vesse's High Speed Yacht Engines, etc. Philadelphia.

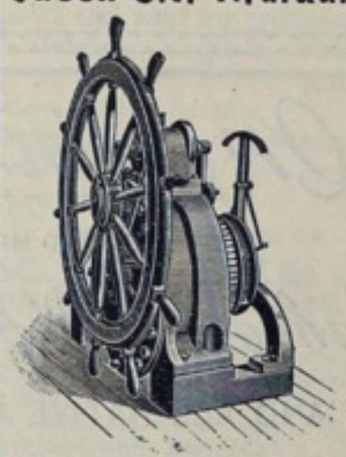
American Boat Building Co. Incorporated.

35x7 foot Launch Frame.

Knock-Down Boats, something new. We do the work, you nail together. Freight low, prices reasonable. Also completed Boats, Half-Raters. Knock-Abouts and Canoes. Send stamp for catalogue.

3517-21 S. Second Street, ST. LOUIS, MO.

Queen City Hydraulic Steerer.



Best and Most Powerful Steerer

FOR TUGS, STEAMERS, ETC.

Price—From $650 to $750, according to size and location in steamer.

Manufactured by

QUEEN CITY ENGINEERING CO., Buffalo, N.Y.

O. S. Richardson Fueling Co.

FUELING DOCKS:
NORTH PIER.
18TH STREET BRIDGE.
ILLINOIS CENTRAL SLIP "C."

STORAGE DOCKS FOR ANTHRACITE:
KINGSBURY ST. BETWEEN INDIANA & ERIE STS.
ELSTON AVE. DIVISION ST. BRIDGE, (NORTH BRANCH.)
NORTH AVE. BRIDGE.
DIVISION ST. BRIDGE, (OGDEN CANAL.)
SOUTH HALSTED ST. BRIDGE.

COAL

OFFICE,
225 DEARBORN ST.
CHICAGO.

For Sale:

DREDGES, TUGS and SCOWS.

Two Dredges and six Dump Scows, one Flat Scow, one Derrick Scow and four Tugs—

One with 15 by 17 engine, allowed 110 lbs. steam.
" " 17 by 16 " " 110 " "
" " 20 by 22 " " 125 " "
" " 20 by 24 " " 110 " "

Inquiries from parties who mean business cheerfully answered.

JAMES ROONEY, 1118 Collingwood Av., Toledo, O.

P. M. CHURCH & CO.,

SAVINGS BANK BLOCK, SAULT STE. MARIE, MICH

LEADING DEALERS IN

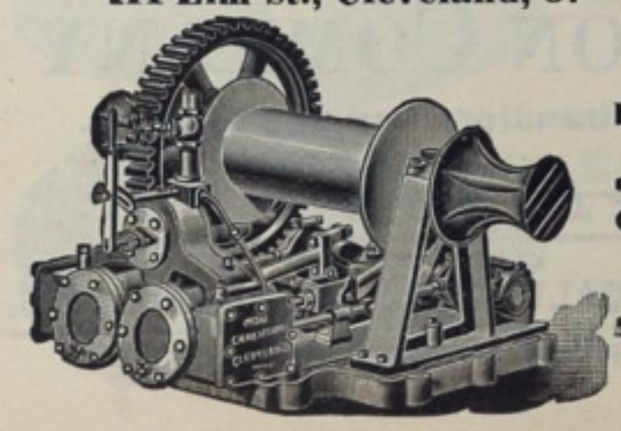
Ship Chandlery,

Marine Hardware, Paints, Oils, Packings, Cordage, Etc.

FIRST-CLASS COPPERSMITH AND TINSHOP IN CONNECTION.

The Chase Machine Co.

111 Elm St., Cleveland, O.



MACHINISTS and ENGINEERS

MANUFACTURERS OF

Land and Marine Engines and Steam Pumps,

SOLE OWNERS AND MANUFCTURERS OF

Chase Fog Whistle Machine.

Over 150 in use on the best class of Lake Steamers.

Special Attention given to

MARINE REPAIR WORK.

Engineers' Supplies.
Asbestos Pipe and Boiler Covering.

TELEPHONE 994.

J. H. PARSONS CHEMICAL CO. TRADE A·B·C MARK CHICAGO, ILL.

ALKALI WATER PURIFIER!

A Pure Chemical for the safe Removal and Prevention of Scale in Steam Boilers. In use by many of the larger steamship lines on the great Lakes. Guaranteed.

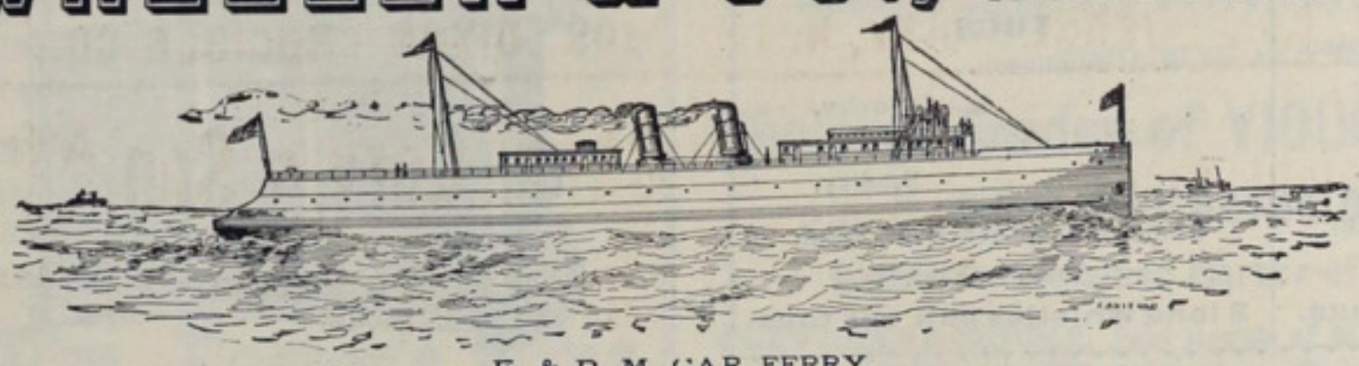
MANUFACTURED BY

THE J. H. PARSONS CHEMICAL CO.,

1509 Masonic Temple, CHICAGO, ILL.

F.W. WHEELER, President. H. T. WICKES, Vice-President. C. W. STIVER, Secretary. JNO. S. PORTER, Treasurer.

F. W. WHEELER & CO., West Bay City, Mich.



F. & P. M. CAR FERRY.

Builders of all kinds of METAL AND WOODEN SHIPS.

AMERICAN CHAIN CABLE WORKS.

ESTABLISHED 1865.

Cable, Dredge, Quarry, Shipping, Crane and Rafting

CHAINS.

Our Dredge and Crane Chains are made of Iron Rolled Specially for that purpose in three qualities, "Burden's," "H. B. & S." iron, and "Burden's Best Best" iron.

THE J. B. CARR COMPANY, TROY, NEW YORK.

The Martin-Barriss Co.

IMPORTERS AND MANUFACTURERS OF

Mahogany, White Mahogany,

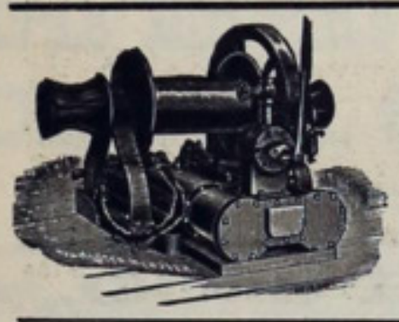
AND ALL NATIVE CABINET WOODS.

HIGH GRADES OF KILN DRIED WOODS FOR CABIN WORK AND INSIDE TRIM.

White Oak Timbers and Plank

CONSTANTLY ON HAND AND SAWED TO ORDER ON SHORT NOTICE.

654 Seneca Street, Cleveland, Ohio.



DOCK and DECK HOISTS

ALL KINDS OF

Machinery & Friction Hoists.

SEND FOR PRICES AND CIROULARS.

JACKSON & CHURCH,
SAGINAW, MICH.

HOWARD H. BAKER & CO.

Ship Chandlers and Sail Makers,

18 to 26 Terrace. BUFFALO, N.Y.

H. CHANNON COMPANY

Ship Chandlers and Sail Makers.

AGENTS FOR

RYLANDS BROS.

MANUFACTURERS OF

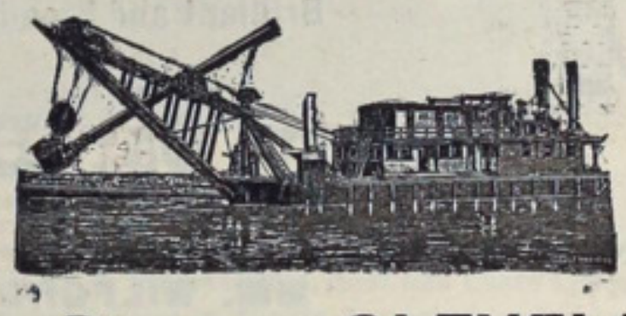
ENGLISH GALVANIZED STEEL HAWSERS,

24-26 Market Street, CHICAGO, ILL

THE L. P. & J. A. SMITH CO.,

Contractors of Public Works.

Dredging, Pile-Driving, Breakwaters, Dry Docks and Pier Building,



Railroads, Canals, Bridges, Foundations, Etc., etc.

23 River St., CLEVELAND, O.

H. E. STEVENS. TOM MEAD. LEW PRESLEY

BUCKEYE STEAM FITTING CO.

Steam Fitters, Engineers Supplies,

Phone 4058. AGENTS FOR

RAINBOW PACKING.

Open Day and Night. 117 River St., CLEVELAND, O.

THOS. DREIN & SON,

TATNALL AND RAILROAD STS., WILMINGTON, DEL.

Builders of Metallic Life Boats and Rafts, Yachts and Pleasure Boats, Life Preservers. Outfit for Lake Steamers a Specialty.

THE RESORT OF YACHTSMEN.

for a quarter of a century has disappeared from view, but the STOCK OF FITTINGS that attracted them still lives in other and larger quarters. We should be pleased to see all our old friends in our new location, and will guarantee to show the LARGEST variety and make the LOWEST prices on record on YACHT AND BOAT HARDWARE.

No new catalogue this year, but ten cents in stamps will bring one of last year's with its 237 illustrated pages to your door. Let us hear from you.

L. W. FERDINAND & CO., 176-184 Federal St., Boston, Mass.

FOR SALE.

Steam Yacht in first-class Condition.

Capacity 5 tons. Dimensions are 40 feet long, 8 feet beam and 3 feet draft. Inquire of

BENHAM & KARR,

SUITABLE FOR DELIVERY PURPOSES. 165 River St., Cleveland, O.

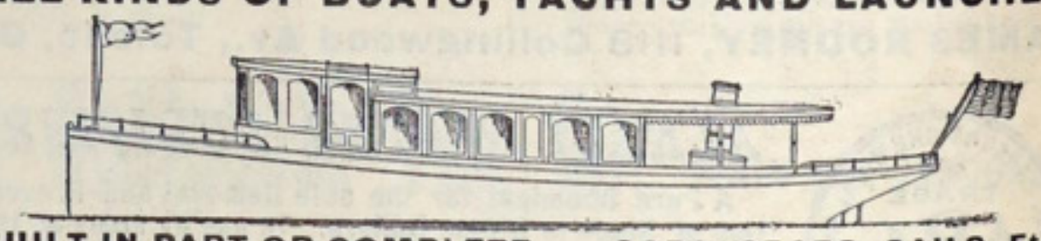
Paint your Vessels with **Superior Graphite Paint.**

NO BLISTERING, CRACKING OR SCALING.

Made especially for Stacks, Decks, Sides, Hulls and Water Compartments. Strictly anti-rust, and most durable and economical.

DETROIT GRAPHITE MFG. CO., 541 River St., Detroit, Mich.

ALL KINDS OF BOATS, YACHTS AND LAUNCHES



BUILT IN PART OR COMPLETE. OARS, SPARS, SAILS, Etc.

Send 50 cents for 72 page Album of Designs.

FRED W. MARTIN, Yacht Designer,

NORTH CHICAGO ILL. (Formerly of Racine, Wis.

Lake County

DIXON'S Graphite Pipe Joint Compound

Enables you to MAKE A TIGHTER JOINT than you can possibly make with red lead. You can do it easier, and parts can be separated at any time without breaking anything. Send for sample and circular.

JOS. DIXON CRUCIBLE CO., JERSEY CITY, N. J.

DIXON'S Lubricating Graphite

Is fully explained in an INTERESTING AND INSTRUCTIVE PAMPHLET which is FREE to all interested. It will pay all Engineers and Machinists to SEND FOR IT.

JOS. DIXON CRUCIBLE CO., JERSEY CITY, N. J.

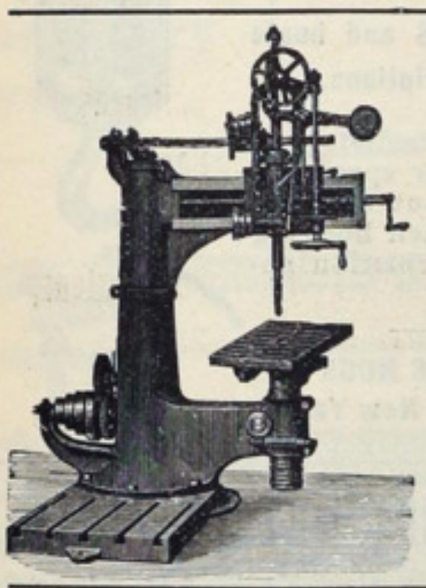
Fred'k Baldt, President. W. M. Gelston, Vice-President
W. S. Bickley, Sec'y and Treas.

Baldt Patent Stockless Anchor.

Made of the finest quality of open-hearth steel and constructed on the ball and socket principle.

Many points of superiority over ordinary Stockless Anchors.

BALDT ANCHOR COMPANY,
CHESTER, PA.
WALTER MILLER, Western Reserve Bldg., Cleveland, Ohio,
Representative for the Great Lakes.
☞ New catalogue containing valuable tables sent on application.



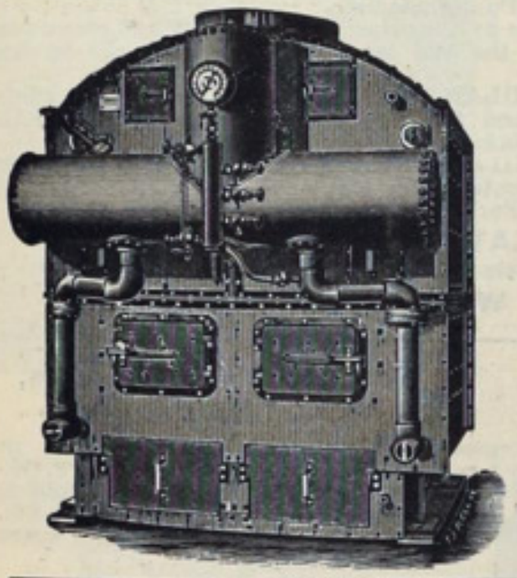
Bement, Miles & Company,

PHILADELPHIA, PA.
MANUFACTURERS OF
Metal Working Machine Tools

For Ship Yards, Railroad Shops, Locomotive and Car Builders, Machine Shops, Rolling Mills, Steam Forges, Boiler Shops, Bridge Works, etc., etc.

Steam Hammers, Steam and Hydraulic Riveting Machines.

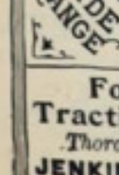
New York Office: Taylor Bldg. No. 39 Cortlandt St.
Chicago Office: 1534 Marquette Building.



ALMY'S PATENT
SECTIONAL
Water • Tube • Boilers.

NOW USED IN
18 Passenger Boats from 70 to 160 feet long.
27 Steam Yachts from 50 to 160 feet long.
U. S. Torpedo Boat "Stiletto."
Numerous Small Launches and Stationary Boilers are giving most excellent results.

ALMY WATER-TUBE BOILER CO.,
No. 178-184 Allens Avenue, near Rhodes St.
PROVIDENCE, R. I.



VANDUZEN Steam JET PUMPS

THE BEST IN THE WORLD.
Pumps any kind of Liquid. Always in order. Never clogs nor freezes. Fully Guaranteed. COST $7 AND UPWARD. Especially useful for Mines, Quarries, Pits, Wells, Clay Pits, Breweries, on Steamships, Ferryboats, Sugar Plantations, etc. A full stock always on hand.

Descriptive Catalogue and Prices furnished Free. **THE E. W. VAN DUZEN CO., Cincinnati, O.**

For Stationary, Portable, Traction Engines, Tugboats, &c.
Thoroughly Reliable—Perfectly Automatic.
JENKINS BROS., - Selling Agents,
NEW YORK, BOSTON, PHILA., CHICAGO.

SIMPLE, STRONG and RELIABLE.

Changed from Steam to Hand by one Lever in Less Than One Second

No. 8
BECK
Patent Steam and Hand
STEERING GEAR.

BUILT BY
Pawling & Harnischfeger,
MILWAUKEE, WIS

Chas. Corv & Son

Manufacturers of the
Mechanical and Electric Marine Telegraph,

Electrical Helm Indicators
Electric Call Bells.

Engine Bells and Brass Work of all descriptions, Shrieking and Siren Whistles.

278 DIVISION ST.,
NEW YORK CITY.

Alfred B. Sands & Son

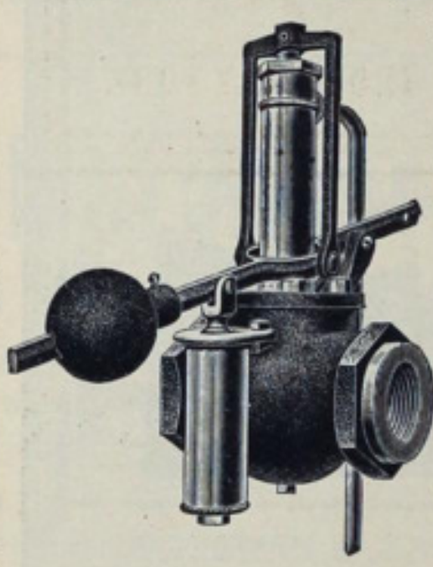
YACHT PLUMBERS,
AND MANUFACTURERS OF
YACHT PLUMBING SPECIALTIES.

Patent applied for.

The only pump water closet in the world so constructed as to be positively free from danger of flooding.

Folding Lavatories, Pumps, Ventilators, Etc., Etc.

134 Beekman St., NEW YORK.



The "DAVIS" Pressure Regulator and Reducing Valve.

Is the simplest and best for reducing the pressure to Steam Steering Engines, Donkey Engines, Steam Winches and all places requiring a uniform pressure below that of boilers.

No diaphragms, spring or packing.

Cut shows ball weight. We can furnish scale weights if preferred.

MANUFACTURED BY
G. M. DAVIS & CO.
106 N. Clinton St., CHICAGO, ILL.
FOR SALE BY
R. E. Hills, Chicago. C. H. McCutcheon, Buffalo
Geo. Worthington Co., Cleveland.
P. M. Church, Sault Ste. Marie. Jas. Walker & Son, Detroit
Jas. Clements & Son, Bay City, Mich.
Cleveland Ship Building Co., Cleveland.
Chicago Ship Building Co., Chicago.

Selling agents—The McIntosh-Huntington Co., Cleveland, O.; The Detroit Sheet Metal and Brass Works, Detroit, Mich.

NEVERSINK CORK JACKET AND LIFE BELT.

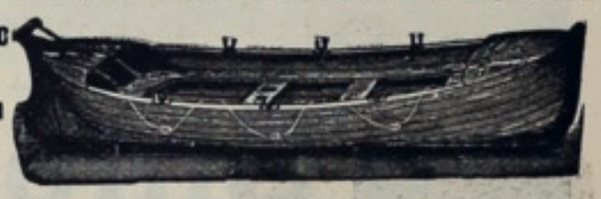
Warranted 24 lb. Buoyancy and full Weight of Cork, as required by U. S. Inspectors.
Consolidated Cork Life Preservers. Superior to all others. **Ring Buoys and Fenders.**

SAFEST, CHEAPEST. Approved and adopted by U. S. Board of Supervising Inspectors.

Also adopted by the principal Ocean, Lake and River Steamer Lines as the only Reliable Life Preserver. Vessels and the trade supplied. Send for catalogue.

Awarded four Medals by World's Columbian Exposition

Metallic and Wooden Life Boats.



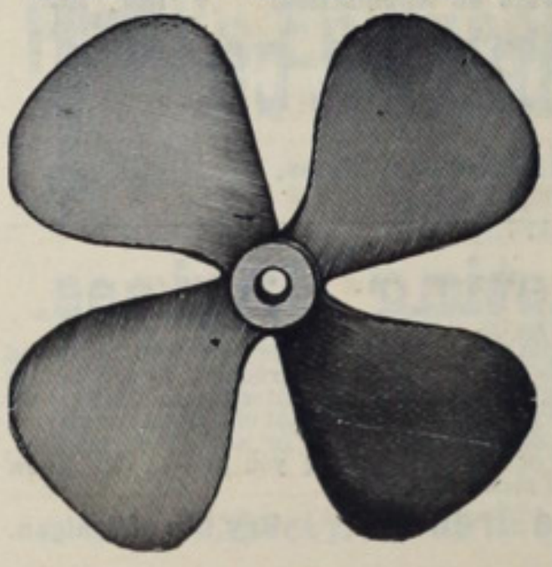
Metallic Life Rafts, Marine Drags.

Manufacturer of Woolsey's Patent Life Buoy, which is the lightest, cheapest and most compact Life Raft known.

Send for Illustrated Catalogue.
Get our prices before buying elsewhere.

D. KAHNWEILER,
437 Pearl Street, NEW YORK CITY.

SHERIFFS MANUFACTURING COMPANY,



Manufacturers of
Propeller Wheels.

MARINE ENGINES AND REPAIRS.

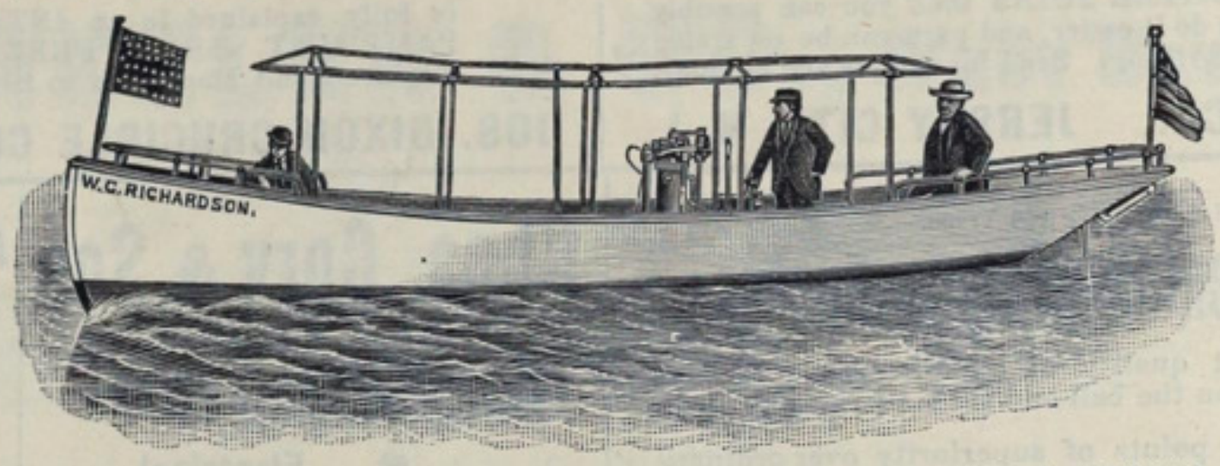
Milwaukee, Wis.
TELEPHONE S.—163.

The Wootters Gas Engine.

Especially adapted for launches and ferry boats. Fitted with friction clutch or reversible shaft.

These engines are giving entire satisfaction in the pleasure yacht W. C. Richardson and the delivery launch Lotta.

Prices and particulars furnished on application.

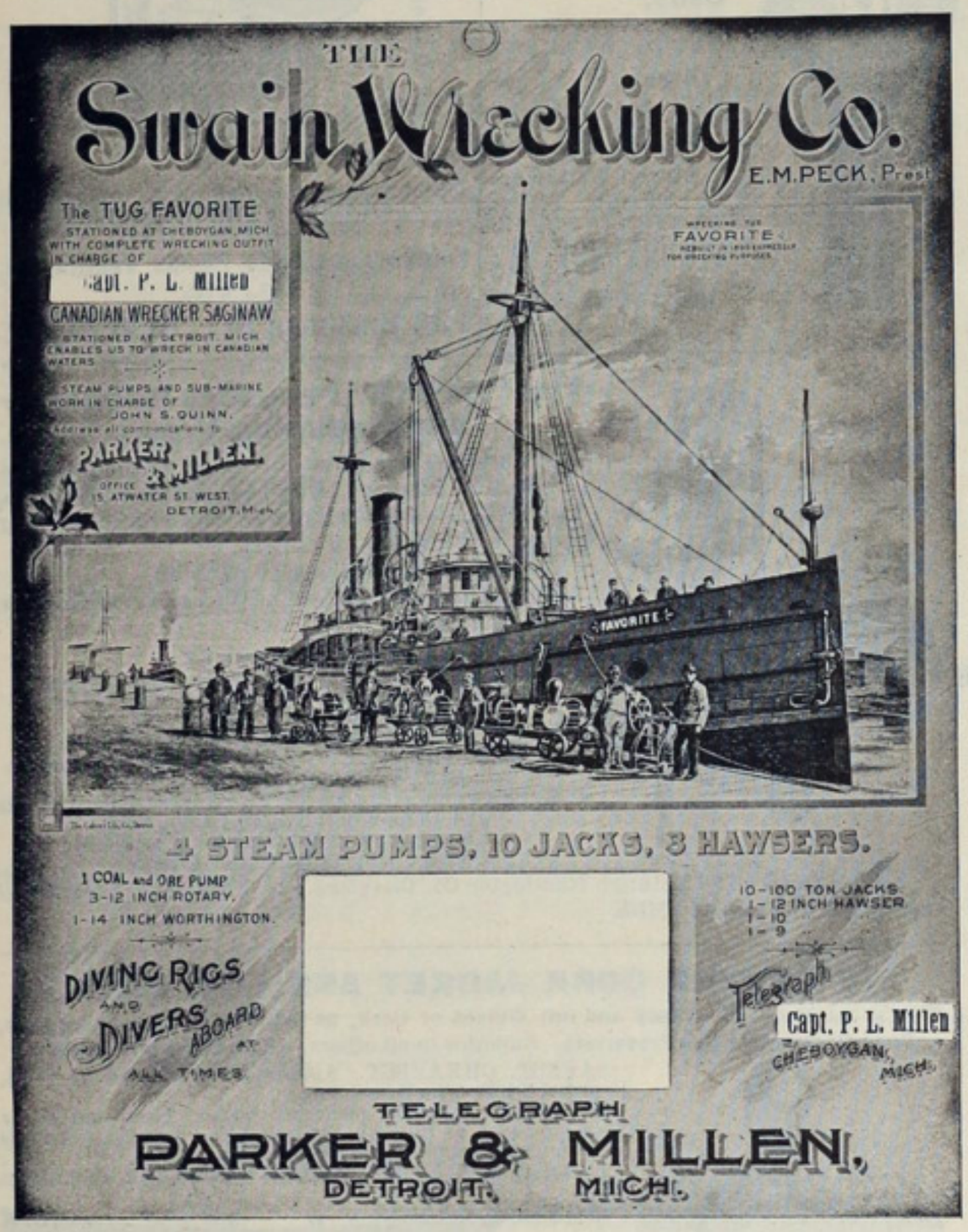


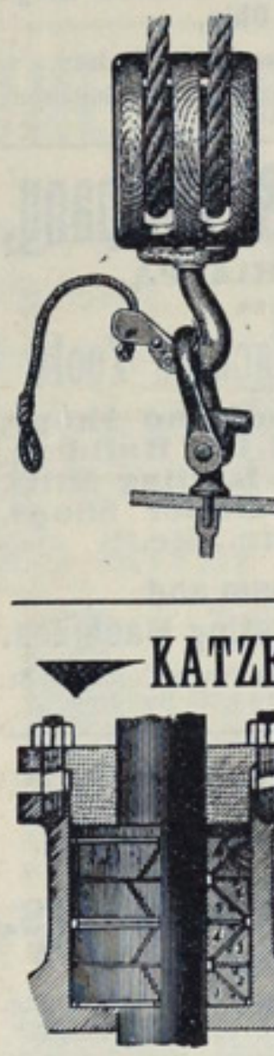
NAPHTHA LAUNCH W. C. RICHARDSON, (Engine 8 horse power—speed 8 miles an hour.)

Suitable for all purposes requiring from 1 to 200 horse-power, with the lowest possible expenditure.

Engines of the stationary type built for every purpose where a reliable and efficient power is required.

BUILT BY THE . . . . . McMYLER MFG. CO., GAS ENGINE DEPARTMENT, 180 Columbus St., CLEVELAND, O.



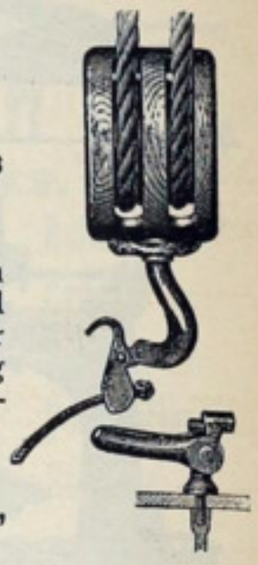


STANDARD AUTOMATIC RELEASING HOOK

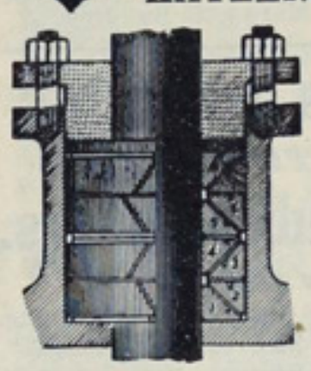
For NAPTHA LAUNCHES and boats of all sizes and descriptions.

Will release a boat immediately in the roughest sea or under speed and can be hooked on without delay or injury to the hands of men hooking it on. For further information apply to

STAND'T AUT. RELEAS'G HOOK CO.,
22 and 24 State Street, New York.



KATZENSTEIN'S Self-Acting METAL PACKING,



For PISTON RODS, VALVE STEMS, etc., of every description, for Steam Engines, Pumps, etc., etc.

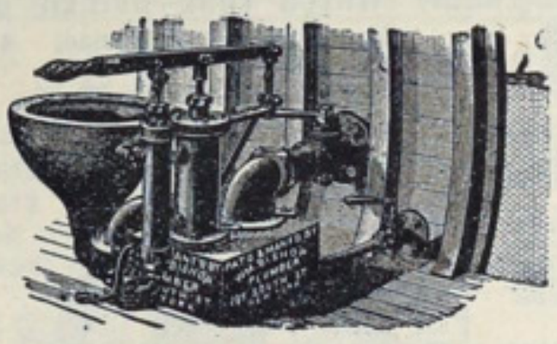
Adopted and in use by the principal Iron Works and Steamship Companies, within the last twelve years, in this and foreign countries.

FLEXIBLE TUBULAR METALLIC PACKING, for slip-joints on Steam Pipes, and for Hydraulic Pressure; also METAL GASKETS for all kinds of flanges and joints.

DOUBLE-ACTING BALANCED WATER-TIGHT BULKHEAD DOORS for Steamers. Also Agents for the McColl-Cumming PATENT LIQUID RUDDER BRAKE. For full particulars and reference, address:

L. KATZENSTEIN & CO.,
General Machinists, Brass Finishers, Engineers' Supplies,
357 West St., New York.

Patent Pump Water Closet.



For Yachts, Pilot Boats, Naval Ships, Etc.

For above or below water line. In use on U.S. Cruiser New York, Columbia, and Battleships Indiana, Maine, Texas, Massachusetts, Etc. Our No. 4 can be put in a space 14 in. x 15 in.

WILLIAM BISHOP & SON,
205 South St., NEW YORK.
724 Third Av., BROOKLYN.
Telephone 569 Franklin.
Yacht Fittings a Specialty.

MIERS CORYELL

21 E. 21st Street, NEW YORK.

Consulting Mechanical Engineer,

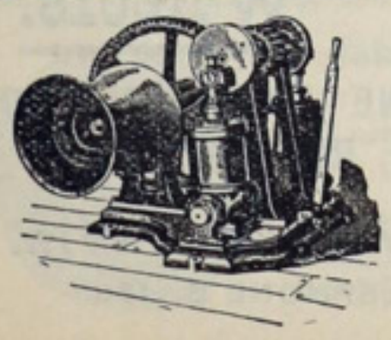
Plans, Specifications and Superintendence. Marine and Water Works Engines and Boilers.

Ship Lamps

OIL AND ELECTRIC FIXTURERS
— FOR —
Steamships, Yachts, &c.
GREAT VARIETY OF DESIGNS.
Prices and Cuts on Application.

PAGE BROS. & CO.

347 to 357 Cambridge St. Boston, Mass.



Hoisting Engines.

We build them in all sizes from new and improved designs. Every engine thoroughly tested before leaving our shop, and guaranteed to be satisfactory in every case. When in want of a Hoist for marine work, dock work, mining or any other purpose, kindly permit us to name you prices. We know we can please you.

Marine Iron Co., Bay City, Michigan.

We claim the following merits for JENKINS BROS.' VALVES.

1. Manufactured of the best Steam Metal. [Valves.
2. No regrinding, therefore not constantly wearing out the Seat of the
3. Contain JENKINS DISC, which is suitable for all Pressures of Steam, Oil, and Acids.
4. The Easiest Repaired, and all parts Interchangeable.
5. Every Valve tested before leaving the factory.
6. ALL GENUINE stamped with Trade Mark.

JENKINS BROS. New York, Philadelphia, Chicago, Boston

C. H. McCUTCHEON,

(Successor to SAMUEL McCUTCHEON.)

Copper, Tin and Sheet Iron Manufactory,
Steamboat and Engineers' Supplies.

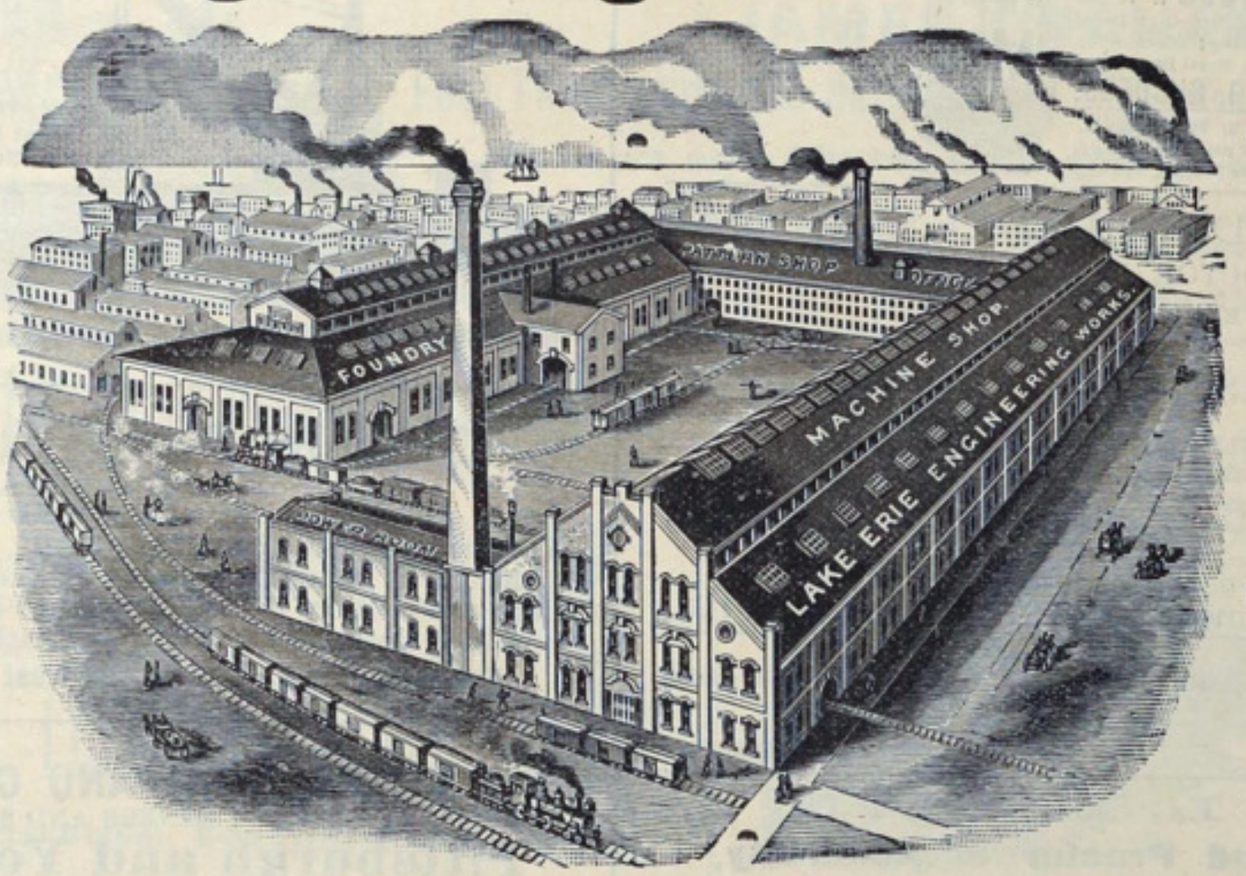
All kinds of Brass Cocks, Globe Valves and Couplings, &c. Iron Pipe and Fittings, and Mill Supplies. Rubber Belting, Hose and Packings, Springs, Valves, &c., Leather Belting and Usudurian Packing.

Telephone No. 68. **No. 18 Ohio Street, BUFFALO, N. Y.**

Lake Erie Engineering Works, Buffalo, N. Y.

RICHARD HAMMOND, Pres't. JOHN COON, Sec'y and Treas.

Steam Engines, Compound, Triple and Quadruple Expansion Engines, From 250 to 10,000 Horse Power For Marine and Stationary Service.



Special Designs for Cable Railways and Electric Power Plants.

The Best Economy and Regulation Guaranteed.

THE BEST EQUIPPED PLANT IN AMERICA.

ADVERTISING RATES ON APPLICATION
COPY OF BOOK AND NAME IN DIRECTORY $5.
BLUE BOOK OF AMERICAN SHIPPING
409 PERRY-PAYNE BLDG. CLEVELAND, O. U.S.A.
CONTAINING PARTICULARS OF ALL THE PRINCIPAL COAST AND LAKE STEAM AND SAIL VESSELS
A DIRECTORY OF SHIP AND ENGINE BUILDERS AND THE MARINE BUSINESS OF THE UNITED STATES.
FOR CIRCULARIZING ★ LIST OF 1000 NAMES AND ADDRESSES, COVERING THE PRINCIPAL SHIPOWNERS AND BUILDERS OF THE UNITED STATES
3000 NAMES OF CAPTAINS
4000 NAMES OF ENGINEERS
ON FILE IN THE PRINCIPAL MARINE ORGANIZATION HEADQUARTERS OF THE WORLD.
HANDSOMELY ILLUSTRATED
USED BY SHIP BUILDERS AND OWNERS FOR GETTING PRICES ON MATERIAL AND SUPPLIES
THE ONLY BOOK OF THE KIND PUBLISHED IN THE U.S.

1897 Blue Book of American Shipping.

"IT IS BETTER TO BOAST AFTER THE BATTLE."

The publishers of the Blue Book are using their energy to make the 1897 Blue Book more valuable than the 1896 Blue Book. Last year we promised to get out a book that would be satisfactory. The result exceeded all expectation and was pronounced far superior to any lake directory ever published.

The value of a directory consists in the frequency to which it is referred to. The Blue Book is used three times to one, more than any other—because it is reliable.

If you want to advertise in or subscribe for the best marine directory ever published, write, at once,

BLUE BOOK OF AMERICAN SHIPPING, 409 Perry-Payne Bldg., CLEVELAND, O.

The Coast Line to MACKINAC
—TAKE THE—

TO MACKINAC DETROIT PETOSKEY CHICAGO

New Steel Passenger Steamers

The Greatest Perfection yet attained in Boat Construction—Luxurious Equipment, Artistic Furnishing, Decoration and Efficient Service, insuring the highest degree of

COMFORT, SPEED AND SAFETY

FOUR TRIPS PER WEEK BETWEEN

Toledo, Detroit and Mackinac

PETOSKEY, "THE SOO," MARQUETTE AND DULUTH.

LOW RATES to Picturesque Mackinac and Return, including Meals and Berths. From Cleveland, $18; from Toledo, $15; from Detroit, $13.50.

DAY AND NIGHT SERVICE.

Between Detroit and Cleveland

Connecting at Cleveland with Earliest Trains for all points East, South and Southwest and at Detroit for all points North and Northwest.

Sunday Trips June, July, August and Sept. Only.

EVERY DAY BETWEEN

Cleveland, Put-in-Bay and Toledo

Send for Illustrated Pamphlet. Address

A. A. SCHANTZ, G. P. A., DETROIT, MICH.

The Detroit & Cleveland Steam Nav. Co.

$2.50 CLEVELAND To BUFFALO

ALSO DAILY LINE BETWEEN

CLEVELAND AND TOLEDO,

Via "C. & B. LINE."

Steamers "City of Buffalo," (new) "State of Ohio" and "State of New York"

DAILY TIME TABLE.

Sunday Included May 30 to October 3.

Lv. Cleveland 7:00 P.M.	Lv. Buffalo 7:30 P. M
Ar. Buffalo 7:30 A.M.	Ar. Cleveland 7:30 A. M

CENTRAL STANDARD TIME.

Take the "C. & B. Line" steamers and enjoy a refreshing night's rest when enroute to **Buffalo, Niagara Falls, Toronto, New York, Boston, Albany, 1,000 Islands,** or any Eastern or Canadian Point.

Cheap Excursions Weekly to Niagara Falls.

Send 4 cents postage for tourist pamphlet. For further information ask your nearest Coupon Ticket Agent or address,

W. F. HERMAN, GEN'L PASS. AGT. T. F. NEWMAN, GEN'L MANAGER,

CLEVELAND, O.

APPOINTMENTS of Captains and Engineers for 1897.

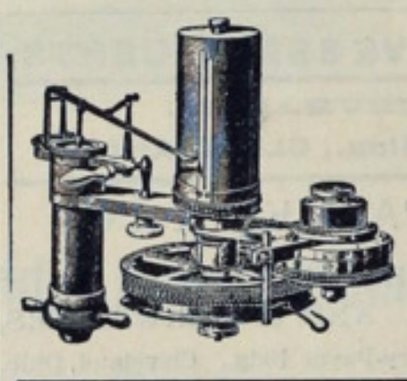
The most complete published. Arranged for reference by fleet and by vessels with names alphabetically arranged.

Necessary to everyone who has business with captains or engineers.

PRICE $1.00.

MARINE REVIEW,

409 Perry-Payne Bldg., Cleveland, O.



TWIXT YOU AND I

The **ENGINEER** that don't **OWN** an **INDICATOR** or carry in his closet some **EUREKA PACKING** is behind the age. The former enables you to tell how your engine is working. The latter makes the engine work smoothly. Send for Catalogue

INDICATOR, $40. WHEEL, $15.

JAS. L. ROBERTSON & SONS,

Successors to Hine & Robertson Co.

40 Cortlandt St., N.Y.

EVERY MARINE ENGINEER on the Lakes, and every second who is studying for first class papers, ought to possess

Reed's Engineers' Hand Book

(Fifteenth Edition.)

Containing 600 engravings and a portfolio of drawings of all parts of marine engines.

It has always sold for $4.50 and $5. Until Dec. 1 any subscriber to the REVIEW may have a copy sent post paid by enclosing this advertisement and $4 to

Marine Review,

BOOK DEPT. 409 Perry-Payne Bldg., CLEVELAND, O.

STEAM ENGINEERING

(Stationary, Locomotive, Marine); Mechanical Drawing; Architectural Drawing; Machine Design; Electricity; Architecture; Plumbing; Railroad, Municipal, **31 COURSES** Hydraulic & Bridge Engineering; Surveying and Mapping; Metal Pattern Cutting; Bookkeeping; Shorthand; English Branches; Mining; Metal Prospect'g.

TAUGHT BY MAIL — THOROUGH — PRACTICAL

All who study **GUARANTEED SUCCESS.**

Fees Moderate, Advance or Installments.

Circular Free; State subject you wish to study.

International Correspondence Schools, Box 965 Scranton, Pa.

HARVEY D. GOULDER,

LAWYER AND PROCTOR IN ADMIRALTY,

CLEVELAND, O.

ALBERT J. GILCHRIST, PROCTOR IN ADMIRALTY,

No. 604 PERRY-PAYNE BLDG., CLEVELAND, OHIO.

AMBROSE V. POWELL, C.E., * * Consulting Engineer.

Specialties: Designing and Construction of DRY DOCKS, Harbor Works, Docks and Plants for Handling Coal and Ore.

Office, 507 Chamber of Commerce, - CHICAGO, ILL.

C. E. KREMER, *Attorney and Counselor-at-Law and Proctor in Admiralty.*

Rooms 14, 15 and 16, Bryan Block, 184 LA SALLE ST., CHICAGO, ILL.

HARVEY L. BROWN,

Counselor at Law and Proctor in Admiralty,

35 White Building, BUFFALO, N. Y.

HAWGOOD & MOORE W. A. HAWGOOD. J. W. MOORE.

Vessel and Insurance Agents,

Residence Phone, Doan 446—W. A. Hawgood.
Long Distance Tel. 2395. **608 Perry-Payne Bldg., CLEVELAND, O.**

W. C. RICHARDSON,

VESSEL AND MARINE INSURANCE AGENT.

Office Telephone 338.
Residence Telephone 2938. Nos. 606 & 607 Perry-Payne Bldg., Cleveland, O.

J. H. BARTOW, TELEPHONE 717.

Vessel and Insurance Agent,

611 and 612 Perry-Payne Bldg., Cleveland, O.

ALEX. CLARK. J. B. HALL. J. H. KILLERAN, *Marine Surveyor.*

A. Clark & Co. VESSEL AND INSURANCE AGENTS,
Tel. No. 892. 55 Main St., BUFFALO, N.Y.

JOHN MITCHELL. JOHN F. WEDOW. ALFRED MITCHELL.

MITCHELL & CO.,

Vessel and Insurance Agents,

508, 509 and 510 Perry-Payne Building, CLEVELAND, OHIO
Office Telephone, 737. Residence, John Mitchell, 3503.

C. R. JONES & CO., VESSEL AGENTS,

FIRE AND MARINE INSURANCE.

Nos. 501, 502 and 503 Perry-Payne Bldg., CLEVELAND, O.

THOS. WILSON,

MANAGING OWNER

WILSON'S TRANSIT LINE.

Gen. Forwarder.
Freight and Vessel Agent.
CLEVELAND, O.

J. T. ROSE. FRANK B. LAZIER.

ROSE & LAZIER,

Vessel Agents and Brokers, and Marine Insurance,

16 Board of Trade,
DULUTH, - - MINN.

PATENTS

QUICKLY SECURED. Trade-marks and Copyrights registered and patent business of every description promptly and skillfully conducted at lowest rates. Inventions introduced, companies formed, and PATENTS SOLD ON COMMISSION. 25 years' experience. Highest references. Send us model, sketch or Photo. of invention, with explanation, and we will report whether patentable or not, free of charge. OUR FEE PAYABLE WHEN PATENT IS ALLOWED. When patent is secured we will conduct its sale for you without extra charge. 32-PAGE HAND-BOOK and list of 200 inventions wanted mailed to inventors free upon request. This is the most complete little patent book published and every inventor should WRITE FOR ONE.

H. B. WILLSON & CO, Patent Solicitors, Le Droit B'ld'g. WASHINGTON, D. C.

PALMER & CO.,

VESSEL AGENTS
AND UNDERWRITERS,

713 Perry-Payne Bldg., Cleveland, Ohio.
Telephone 644.

J. J. H. Brown. Edward Smith. J. B. Rodgers.

BROWN & CO.,

Vessel and Insurance Agents,

202 Main St.,

BUFFALO, N. Y.

White, Johnson & McCaslin,

ATTORNEYS-AT-LAW,

—AND—

Proctors in Admiralty,

26-27 Blackstone Building,
CLEVELAND, - OHIO.

ORESTES C. PINNEY,

Lawyer and Proctor in Admiralty.

Rooms 722 and 723 Perry-Payne Bldg.
CLEVELAND, OHIO.
Telephone 2585.

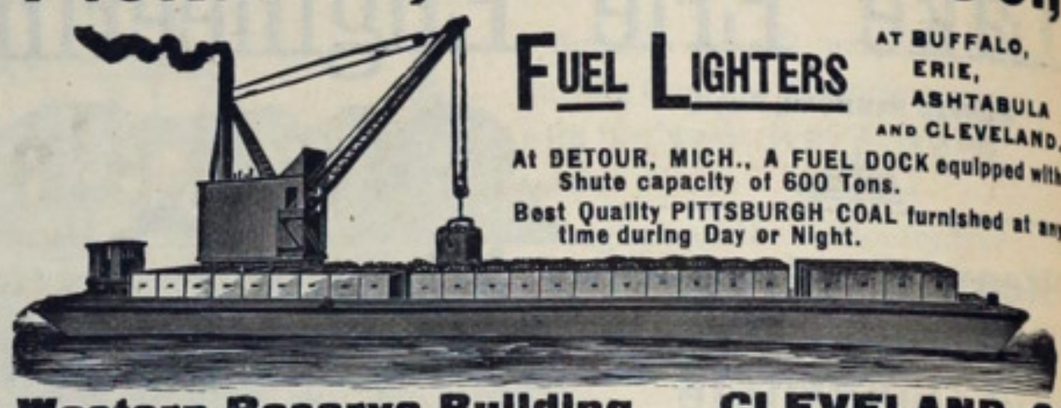
C. W. ELPHICKE. JAS. A. MYERS. CALVIN CARR.

C. W. ELPHICKE & CO.

GENERAL INSURANCE AGENTS,

Room 10, No. 6 Sherman St., Chicago, Ill.

Pickands, Mather & Co.,



FUEL LIGHTERS AT BUFFALO, ERIE, ASHTABULA AND CLEVELAND.

At DETOUR, MICH., A FUEL DOCK equipped with Shute capacity of 600 Tons.

Best Quality PITTSBURGH COAL furnished at any time during Day or Night.

Western Reserve Building, CLEVELAND, O.

Ohio & Pennsylvania Coal Co.

FUEL DEPARTMENT.

MINERS AND SHIPPERS,

Youghiogheny and Ohio Steam Coals. Steamboats, Tugs, etc., Coaled day or night, DOCKS FOOT WEST RIVER STREET. WHISKEY ISLAND GOVERNMENT PIER and C. & P. R. R. SLIPS. Also STEAM LIGHTER—Equipped with Revolving Derrick and (100) two ton buckets.

Telephone 1608. Office, 130 West River St., CLEVELAND, OHIO.

THE PITTSBURGH AND CHICAGO GAS COAL CO.

MINERS AND SHIPPERS OF

Pittsburgh and Youghiogheny Coal.

Fuel Docks West Side of Main River, Cleveland, Ohio, just above Main St. Bridge.
Latest equipment for rapid fueling of Steamers at all hours, day or night.
Fuel Lighter 300 tons capacity; buckets 2½ tons capacity.

Telephone { Office 1888. Fuel Dock 1590. Ore Dock, 2413.

J. A. DONALDSON, Agent, 420-421 Perry-Payne Building.

WANTED:

To charter for the Great Reichhold shows a vessel for a tour of the lakes. Must have room for 35 head of stock, 12 wagons and 60 people. State full particulars, where vessel can be seen and lowest terms for 60 days.

W. F. KIRKHART, Manager,

175 W. Madison St., Chicago, Ill.

Man With a Small Capital

Can find an excellent investment in two good marine articles.

C. WOLF,

130 W. River St., Cleveland, O.

H. A. BARR, PRESIDENT, Escanaba. F. H. VAN CLEVE, SEC. Escanaba. CAPT. GEO. BARTLEY, SUPT. Escanaba.

ESCANABA TOWING & WRECKING CO., Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH, Engine Compound, Cylinder 16 and 30 inches diameter, 30 inch Stroke, Steam Pressure Allowed, 125 pounds.
TUG DELTA, Cylinder 20 by 22, Steam Pressure Allowed, 105 pounds.
TUG OWEN, Cylinder 20 by 20, Steam Pressure Allowed, 104 pounds.

CENTRIFUGAL PUMPS, Seven and Fourteen Inch Suction

H. G. TROUT,

KING IRON WORKS,

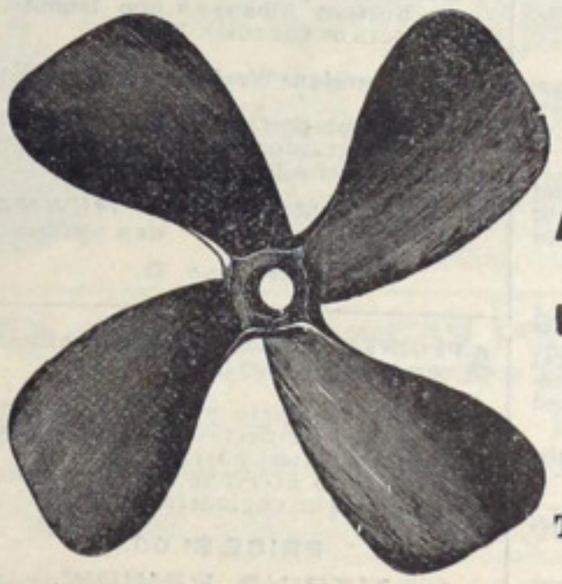
BUFFALO, N. Y.

MANUFACTURERS OF

TRIPLE EXPANSION, THREE CYLINDER, FORE AND AFT And STEEPLE COMPOUND MARINE ENGINES,

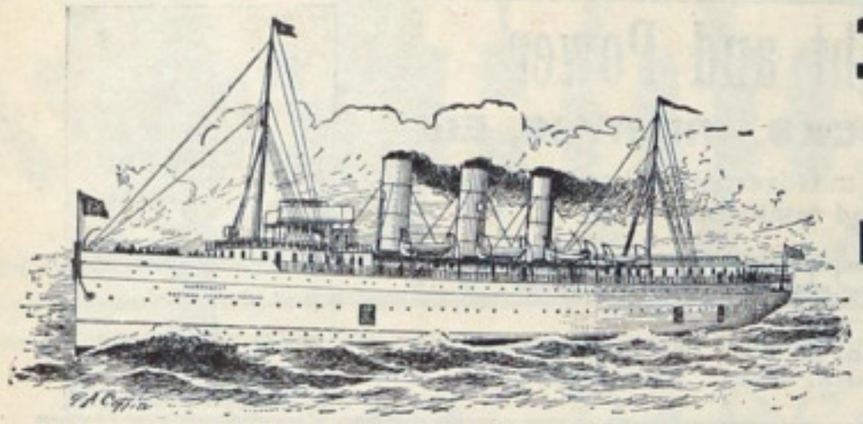
High and Low Pressure Engines, Sectional. Propeller, Tug and Yacht Wheels,

Cowles Aluminum and Manganese Bronze Propeller Wheels.



These Wheels are noted for their extra speed, towing power and proportionate saving of coal.

PRICES QUOTED ON APPLICATION.



Shippers of Coal by Rail and Water.

RAPID FUELING DOCKS, DETROIT RIVER.

JAMES GRAHAM & CO.,

Foot Twenty-first St., Detroit, Below Routes of Passenger and Car Ferry Lines.

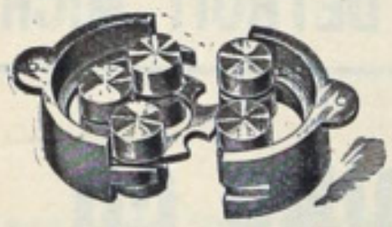
Pockets and Chutes arranged for different types of vessels.

BEST STEAM COAL. Large Supplies and every effort to give dispatch, day and night. Wide stretch of river for tows, and plenty of water at dock at all times.

Office 1005 Chamber of Commerce. Phone 2083.

FERRALL'S PATENT

Long Bearing Self-Adjusting 5 Roll Sheave



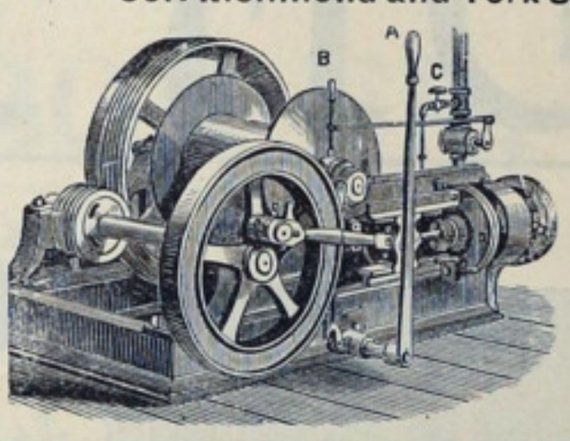
Has no rivets in its construction, therefore is made stronger, having an interior separator to prevent the rolls from touching each other, and an interior rail to guide the rolls.

BACNALL-LOUD BLOCK CO.

162 Cemmercial Street, . - - - BOSTON, MASS.

WILLIAMSON BROS.

Cor. Richmond and York Sts., PHILADELPHIA, PA.



Hoisting Engines and Ship Steering Engines.

With either Frictional Spur or Worm Gear of various Patterns to suit all purposes.

Over 150 of the largest and most modern lake steamers have our steerers.

THE W. L. SCOTT CO.

Wholesale Dealers in

Shamokin, Wilkesbarre, and Hazleton-Lehigh

COALS.

Mansfield Steam Coal.

FUELING VESSELS a specialty, either from dock or steam scow **Mansfield**, capacity 300 tons, in buckets, which gives quick dispatch. Boats coaled day or night. Docks lighted with electricity and equipped with steam derricks.

Fueling Office at Canal Dock, ERIE, PA.

The Rochester & Pittsburgh Coal & Iron Co.

REYNOLDSVILLE COAL.

Steamboat Fuel Dock. Blackwell Canal at Michigan St. Bridge. 1400 feet dock frontage.

Steam Elevator and 4 Steam Derricks. Steam Fuel Scow, Capacity 550 Tons. Boats Coaled Day or Night.

OFFICE: 694 Ellicott Square Bldg., BUFFALO, N. Y.

TELEPHONES: Ellicott Square Bldg., Seneca 371 A. Dock, Seneca 371 D.

WM. H. HAZEN,
Dock Superintendent.

10,000 IN USE.

Unaffected by Weather.

Portable, Self Contained.

800 to 4000 Candle Power from KEROSENE OIL.

Especially adapted for Contractors, Quarries, Shovels, Railroad Construction, Dredges, Bridge and Dock Builders, Water-Works, Brick Yards and Coal Docks.

400 RAILROADS and over **300** CONTRACTORS now use the WELLS LIGHT.

The Wells Light Mfg. Co.

EDWARD ROBINSON, Sole Proprietor.

46 Washington Street, NEW YORK.

MARINE VALVE OIL FOR INTERNAL LUBRICATION. RENOWN ENGINE OIL FOR EXTERNAL LUBRICATION

STANDARD OIL COMPANY, MARINE VALVE OIL, CLEVELAND, O.

Marine Valve, Renown Engine, Eldorado Engine, Crank Case, Victor Signal, Dark Lubricating, Mineral Seal, Head Light, Artic Cup Greases, and Lard Oils.

— CARRIED IN STOCK AT THE —

STANDARD OIL COMPANY'S MARINE DEPOT,

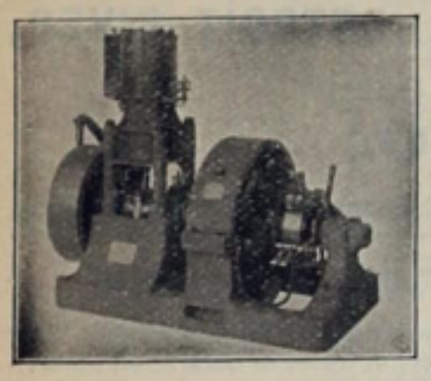
TELEPHONE 77. **123 River Street, CLEVELAND, O.** MAIN OFFICE TELEPHONE 682.

ALSO FOR SALE BY **STANDARD OIL COMPANY,**

Chicago, Ill., No. 5 Wabash Ave.
Racine, Wis.
Milwaukee, Wis., Broadway & Mason.
Sheboygan, Wis.
Manitowoc, Wis.
Green Bay, Wis.
Marinette, Wis.
Oshkosh, Wis,
Duluth, Minn,
West Superior, Wis.
Hancock, Mich.
Marquette, Mich.
Buffalo, N. Y.
Sault Ste. Marie, Mich.
West Bay City, Mich., M.C.Ry. & 10th St
Saginaw, Mich., Eighth & Sears Sts.
Detroit, Mich., 46 Jefferson.
Toledo, O., Summit & Monroe Sts.

STANDARD OIL COMPANY, RENOWN, ENGINE OIL, CLEVELAND, OHIO.

ATLANTIC REFINING COMPANY, French & 16th Sts., Erie, Pa.
D. ROBESON, Port Huron, Mich.
W. S. MCKINNON, Ashtabula Harbor, O.
HULL & RAND, Huron, O.
EDWARD BRAMMALL, Bnton Harbor, Mich.
BABY & DALE, St. Clair, Mich.
N. C. ALTEN, Lorain, O.
A. F. HARRINGTON, Conneaut Harbor, O.
A. H. MCGONAGIL, South Chicago, Ill.
MARINE SUPPLY CO., Fairport, O.
F. KRANZ, Sandusky, O.
THE M. I. WILCOX CORDAGE & SUPPLY CO., Toledo O



Complete Electric Plants for Light and Power

On STEAMSHIPS, WHALEBACKS, YACHTS, DOCKS, WHARVES, Etc.

Our system is complete in every detail. All our appliances are made to Governmental and Insurance requirements and are perfect. Write for prices and catalogues.

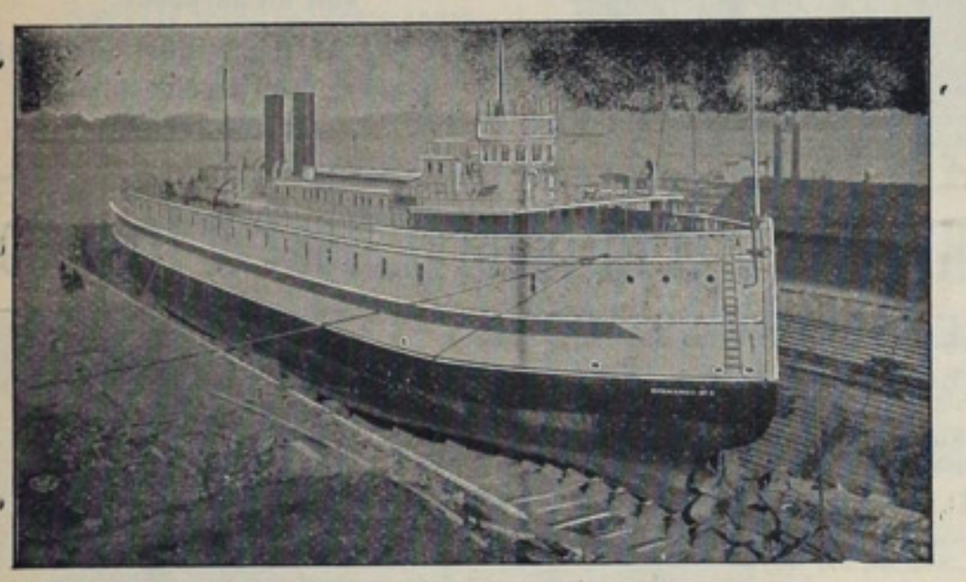
General Electric Company.

SALES OFFICES

Schenectady, N. Y. Chicago, Ill. Detroit, Mich. Buffalo, N. Y. Columbus, O.
Boston, Mass. Philadelphia, Pa. Baltimore, Md. Portland, Ore. San Francisco, Cal.
New York, N. Y. New Orleans, La.

FRONTIER IRON WORKS

MARINE ENGINES,
DETROIT, MICH.



Shenango No. 2, 300 feet long, 54 feet beam.

CRAIG SHIP BUILDING CO.

TOLEDO, OHIO,

Metal and Wooden Ship Builders.

New Dry Dock—450 feet long, 110 feet wide on top,
55 feet wide on bottom, 16 feet of Water on Sill.

Repairs to Metal and Wooden Ships
A Specialty.

THE BETHLEHEM IRON CO.

Works & Principal Office, **South Bethlehem, Penn.**

Marine Engine Forgings

of all descriptions, made either SOLID or HOLLOW from Fluid-Compressed Hydraulic-Forged Open Hearth Steel.

Ship-Plates. Boiler-Plates. Tank-Plates.

NEW YORK OFFICE, - - 100 Broadway.
PHILADELPHIA OFFICE, - 421 Chestnut St.
CHICAGO OFFICE, - - Marquette Bldg.

The United States Standard Register of Shipping.

Providing the only Standard Classification based on Construction Rules Designed for Lake Vessels.
Classed Vessels Receive the Lowest Rates of Insurance.

SURVEYORS.

SINCLAIR STUART, Surveyor of Iron and Steel Construction and Engineer Surveyor.

.....Surveyor for District comprising Lakes Superior, Michigan and Huron and Lake Erie, as far East as, and including Cleveland, O.

EDWARD CASKIN, Potter Building, Main Street, Buffalo, N. Y., Surveyor for District comprising Lake Ontario and Lake Erie, as far West as, but not including Cleveland, O.

Application for survey of vessels and subscriptions to Register Book will be received by the surveyors or at the office of

The United States Standard Steamship Owners', Builders' & Underwriters' Ass'n, Ltd.
Post Building, 16 and 18 Exchange Place, . NEW YORK.

Cuddy-Mullen Coal Co.

Miners and Shippers of **Steam Coal**

FUELING DEPARTMENT FACILITIES:

CLEVELAND HARBOR—
Car Dumper; Eight Pockets 1,000 tons capacity; Three Steam Derricks; Lighter.

DETROIT RIVER BRANCH—
Amherstburg, Four Pockets and Three Steam Derricks; Sandwich, Ten Pockets and Two Steam Derricks.

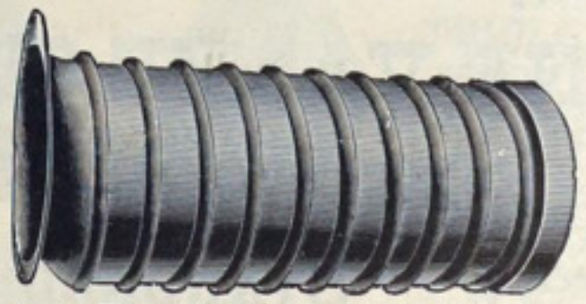
SAULT RIVER BRANCH—
Two Docks at Detour (formerly known as the Anthony and Watson Docks) Equipped with Pockets and Steam Derricks.

Good Coal; Courteous Attention; Quick Dispatch.

General Offices: Perry-Payne Bldg., Cleveland, O.

PURVES' RIBBED STEEL BOILER FURNACE FLUE.

BACK END.



FRONT END.

With this style of Furnace Flue, the rivets at the "back end" are out of the line of fire, and all that has to be done to remove it is to cut out the rivets at the ends and slip it through the front; and to replace it, simply to slip it back in its place and rivet up the ends again without disturbing any other part of the boiler. No smith work is required to fit it in a boiler or to refit it when replaced. It is ready for use as it comes from the manufacturers. This style of Flue has been in use six years without a single complaint.

Over 16,000 of Purves' Ribbed Steel Furnace Flues in successful use in Marine Boilers.

ELLIS & EAVES SYSTEM OF INDUCED OR SUCTION DRAFT.

CHARLES W. WHITNEY,
Sole Agent for the United States and Canada,
Bowling Green Building, 5 to 11 Broadway, New York City.

S. F. HODGE & CO.

MARINE ENGINES,
PROPELLER WHEELS,
DECK HOISTERS,
MARINE REPAIRS.

320 ATWATER STREET,
DETROIT, MICH.

THE BABCOCK & WILCOX CO.

FORGED STEEL WATER-TUBE MARINE BOILER,

29 CORTLANDT ST., NEW YORK.

Boilers sold to United States Merchant Marine and Yachts - - - - - 16,500 H. P.
Boilers sold to United States Navy - - - - - - - - - - 7,500 "
The onlv Water-tube Boiler in the British Merchant Marine 15,500 "

BAR IRON — THE BOURNE-FULLER CO. — PIG IRON

CLEVELAND, O.

SHIP PLATES, BOILER PLATES,
ANGLES, BEAMS, CHANNELS, BARS,
BOAT SPIKES, CLINCH RINGS,

SALES AGENTS:

THE CAMBRIA IRON CO.

Mfrs. of Open Hearth and Bessemer Steel.

De Grauw, Aymar & Co.,
34-35 South Street,
NEW YORK, N. Y.

Sole Selling Agents in the United States for

TYZACK'S
STOCKLESS ANCHORS

Over 100 of these Anchors on Lake Vessels.

DETROIT SHEET METAL AND BRASS WORKS

No. 64-66-68-70-72 ORLEANS STREET, DETROIT, MICH.

Jobbers of..... Pipe, Valves, Fittings. Pack ng, Oil and Engineers Suplies.

Contractors for High Class Steam Fitting, Steam Heating, Plumbing, Copper Work, and all Classes of Sheet Metal Work.

Manufacturers of Clark's Patent Metallic Life Raft, Side Lights, Marine Hardware, Hurricane, Cabin and Platform Lamps, Trip Gongs, etc.

Agents for..... Laidlaw - Dunn - Gordon Steam Pumps, Warren Webster's Specialties, and Buffalo Forge Co.'s Fans, Engines and Heaters.

Engineers can be waited on promptly day or night.

Steamboat Fuel at Ashtabula.

Large Supplies of Best Quality.

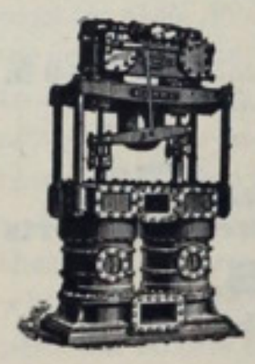
Lighter Carrying Different Grades at all Times.

Fuel scow with elevators and discharging spouts. Storage of 650 tons. Discharges 150 tons an hour into steamers while unloading cargo.

M. A. HANNA & CO.,

Main Office, Perry-Payne Bldg., Cleveland. Miners and Shippers.

THE GEO. F. BLAKE MFG. CO.



AIR PUMP ON U.S. CRUISER NEW YORK.

BUILDERS OF

MARINE PUMPS

Single and Duplex Pumps for Boiler Feed, Fire or Bilge Service—Vertical and Horizontal.
Vertical and Horizontal Pumps, Air Pumps for Surface and Jet Condensers.

95 and 97 Liberty St., NEW YORK.

ECLIPSE SECTIONAL RAINBOW GASKET.

3/8-INCH FOR PIPE UNIONS.
1/2-INCH FOR HAND HOLES.

Facsimile of a 6-inch section of Eclipse Gasket, showing name and trade mark imbedded.

5/8-INCH FOR REGULAR SIZE.
3/4-INCH FOR LARGE SIZE.

MAN HOLES.

Patented and Manufactured Exclusively by

PEERLESS RUBBER MFG. CO.,

16 Warren Street,

+ NEW YORK. +

Write for Testimonials.

16-24 Woodward Ave., DETROIT, MICH.

193-195 Bank St., CLEVELAND, O.

202-210 So. Water St., CHICAGO, ILL.

STERLING, WELCH & CO.

12 and 14 Euclid Ave., CLEVELAND, O.

BOAT FURNISHING A SPECIALTY.
CARPETS, OIL CLOTHS,
CURTAINS, &c., &c.,,
SUPPLIED AT WHOLESALE RATES.

The Cleveland Dry Dock Co.

148 Elm St., Cleveland, O.
Telephone 1616.
Resid. 'Phone 3634.

REPAIRING A SPECIALTY.

Dimensions of Dock:
Lth. over all, 360 ft.
Lth. on blocks, 340 ft.
Width of gate, 50 ft.
Depth over sill, 20 ft.

Capt. W. W. BROWN, Sec'y & Mgr.

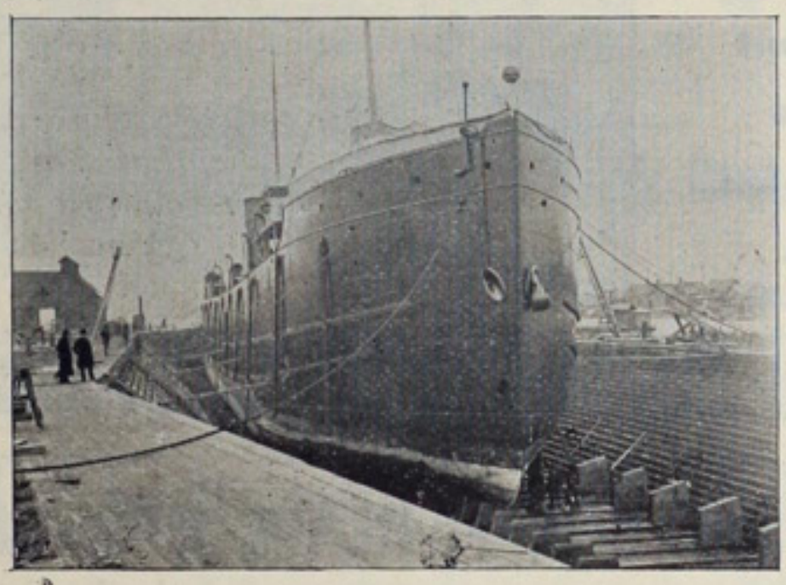
AMERICAN STEEL BARGE CO.

STEEL and METAL SHIPS

Of all classes built on the Shortest Possible Notice at our yards at

West Superior, Wis., and also at Everett, Wash.

Plates & Material Always on hand to Repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak instock for Repairing Wooden Vessels of all Classes.

SIZE OF DOCK.

Length, extreme	537 feet.	Entrance, Top	55 feet 9 in
Breadth, Top	90 " 4 in.	Entrance, Bottom	50 "
Breadth, Bottom	52 "	Depth over Sills	18 "

LARGEST DRY DOCK ON THE LAKES.

Prices for Repairs and Docking same as at lower lake ports

SUPERIOR, WIS.

A number of Propellor Wheels in stock at Dry Dock.

COAL

STANLEY B SMITH & CO.
OPERATING
SMITH'S COAL DOCK
POCKET FUELING AND LOW DOCK,
DETROIT, MICH.
OFFICES: DETROIT MICH.
LORAIN COAL DOCK
LORAIN, OHIO.
OPERATING
LAKE SHIPPERS OF STEAM COAL.
STEAMBOAT FUELING

COAL

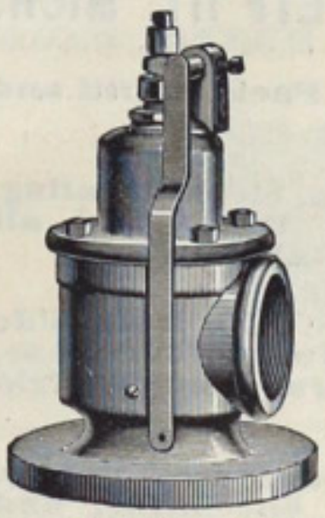
H. C. BURRELL

MARINE REPORTER, DETROIT.

Small boat on the river at all hours of the day and night. Let us give you prices on delivery of orders and other business at Detroit. Engineers and firemen, mates and deck hands, furnished on short notice.

Office Foot of Woodward Ave. Tel. Main 46 B.

CROSBY STEAM GAGE AND VALVE CO.



CROSBY POP SAFETY VALVES. Locomotive, Marine and Stationery.
CROSBY WATER RELIEF VALVES, for Pumps, Hydrants, etc.
CROSBY IMPROVED STEAM PRESSURE GAGES.
CROSBY STEAM ENGINE INDICATORS, with Sargent's Electrical Attachment for taking any number of Diagrams simultaneously.

The Original SINGLE BELL CHIME WHISTLES.
BRANDEN PUMP VALVES; rubber with wire-coil insertion.
BOSWORTH FEED-WATER REGULATOR, PATENT GAGE TESTER, and many other specialties in Steam Lines.

Main Office and Works: Boston, Mass.

Stores: Boston, New York, Chicago, and London, Eng.

WE WILL REPAIR YOUR STEAM FITTINGS PROMPTLY.